ELECTRICAL WEST

June 1949
25 cents

17th Annual Convention-In-Print

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U. S.

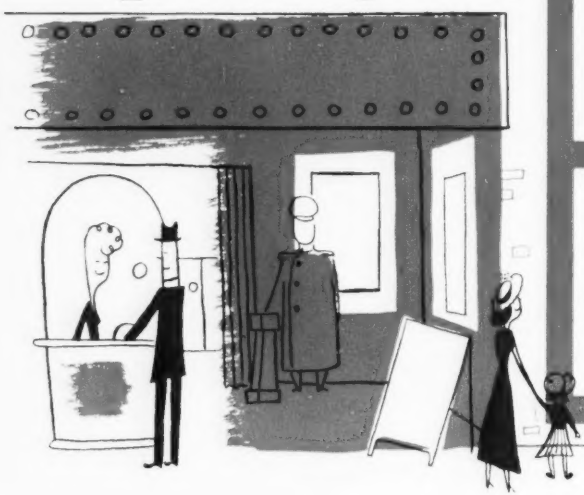
SPEAKING SALES-WISE!

That's what Edison Company advertising is doing in new-papers and magazines, on the air and through the mail. Today, just as it did yesterday and as it will tomorrow, it is speaking sales-wise to build business for electrical appliance dealers.

It follows a formula proved through more than fifty years of successful appliance merchandising in Southern and Central California. Edison tells them, and the dealer sells them.

In a way, our part of the program is a good bit like show business—so you won't mind if we express it in theatrical language: Edison advertisements are "seasoned performers" tuned to your selling seasons. They're "troupers" devoted to keeping the show going. They're watched closely by customers because they're "feature attractions"—and by dealers because they bring results at the "box office!"

when the food is hot
and the kitchen is cool
of course—it's electric!
SOUTHERN CALIFORNIA EDISON COMPANY
when you just set it—and then forget it
of course—it's electric!
SOUTHERN CALIFORNIA EDISON COMPANY
when your dinners
are winners!
of course—it's electric!
SOUTHERN CALIFORNIA EDISON COMPANY
when the water is hot—and your temper is not
of course
—it's electric!
SOUTHERN CALIFORNIA EDISON COMPANY
when heat's in the water
and not in the house!
of course—it's electric!
SOUTHERN CALIFORNIA EDISON COMPANY



SOUTHERN CALIFORNIA EDISON COMPANY

Edison

Can beauty and utility be one?...

THIS question must be faced when you consider the use of substations in residential areas where appearance is a factor.

The answer is. . . .

No. . . . when you consider "piece-meal" substations with their unsightly looks and space-consuming design.

Yes. . . . when you use General Electric *unit* substations.

This problem was solved for many utilities when G-E engineers showed them how G-E unit substations with their smooth, integrated lines—plus some incidental landscaping—would easily overcome appearance objections. At the same time the utilities realized the many benefits—such as lower costs and increased reliability—of G-E load-center power distribution.

We'd like to show you how other utilities utilized G-E unit substations. Give us a call, or write for brochure GEA-5155 that shows how you can utilize G-E engineering and service. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

831-60

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

JUNE
1949

SPOKESMAN FOR MOST HIGHLY ELECTRIFIED REGION OF THE U. S.
The all-industry magazine of progress, established 1887, and incorporating the "Electrical Journal," "Journal of Electricity, Power and Gas" and "Journal of Electricity." Contents copyright, Sixty-second year of publication

ELECTRICAL WEST

James H. McGraw (1860-1948), Founder
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NEXT MONTH

Ways and means of increasing the worker's purchasing power will be discussed next month in a lead article by Stanley M. Johns.

New electronic "tools" now available to the utility offer a means of reducing investment and operating costs and of giving better service. The newest of these tools will be discussed in the engineering section. Also coming up is the first in a series of four articles on preventive maintenance — an important subject to the power engineer. Washing insulators on high-voltage energized lines is a practice of many West Coast power companies. The latest in insulator washing equipment will be covered in a picture story.

For those interested in lighting, wiring and industrial controls, there will be some lighting ideas, a modern theater dimmer installation, a centralized industrial control job and industrial heating and power factor sheets.

PCEA's convention at Coronado will be reported in detail. Three section meetings and pertinent talks by members of the industry at the general sessions will be covered. Another association meeting to be reported next issue is that of the NECA District 6 at Oakland.

Pictures of the Los Angeles home show and other features will be found in the sales section.

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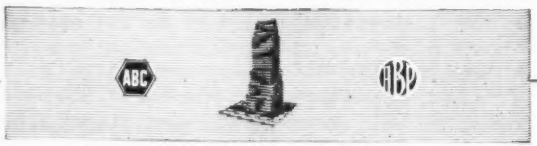

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NO. 6

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throw away your paint brush

get ELEMEX capacitors in Stainless Steel tanks

. . . with L-M "Lifetime" solder-sealed bushings

. . . in 15 and 25 kvar sizes in standard voltage ratings

. . . at NO increase in price

One utility company estimates that it costs $8 per unit to repaint capacitors. *Whatever* it costs is *too much*—when you can get *good* capacitors like ELEMEX in *stainless steel tanks!* And that's not even considering all their other advantages. They're pretty swell jobs; we think it would be worth your time to take a good look at them!

Stainless steel tanks mean no painting, ever! They also mean that the lineman doesn't have to take time to scrape paint to get a good ground. Tanks are "Hydis" treated—for good heat dissipation.

OTHER ELEMEX ADVANTAGES

Uniform terminal elevation—another time-saving feature. The 15's and the 25's have the same terminal elevation above the hanger in each voltage class. No change in leads when you replace or mix 15 *kvar's* with 25's. The 25's are 5¼" longer *below* the hanger, so they're easy to identify from the ground. All sizes same width and thickness, fit same hanger bolts.

"Paragroove" Connectors, another L-M "first": wire is just dropped in and clamped; no crossing of leads, no loose parts. **L-M "Lifetime"** solder-sealed bushings keep air out, keep ELEMEX liquid in—permanently.

Low unit stress; conservative design assures long life. **Safer:** discharge resistors across every pack or parallel group of packs. **Individual Testing** of packs, tanks and completed capacitor before, during, and after impregnation assures uniformity, long life.

Continuous individual evacuation, drying, and capillary impregnation with ELEMEX non-inflammable dielectric assure precise control of power factor and capacitance—an exclusive L-M research development.

ELEMEX capacitors have an outstanding 5-year service record . . . negligible rate of failure . . . *not one* leaky bushing . . . and thanks to the L-M braced sealed carton, only one has broken in shipment! A good record, don't you think?

WANT MORE INFORMATION?

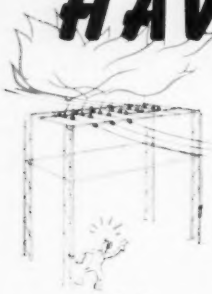
Want details on ELEMEX? Data on capacitor application, uses, savings, power factor calculation? L-M's engineering staff will be glad to help you. **Ask the L-M Field Engineer** to get you the information you need, ***or write*** **Line Material Co., Milwaukee 1, Wisconsin.** 6083

LINE MATERIAL Capacitors

LM

Complete Coordinated Equipment for All Distribution Requirements

HAVE YOU SWITCHING

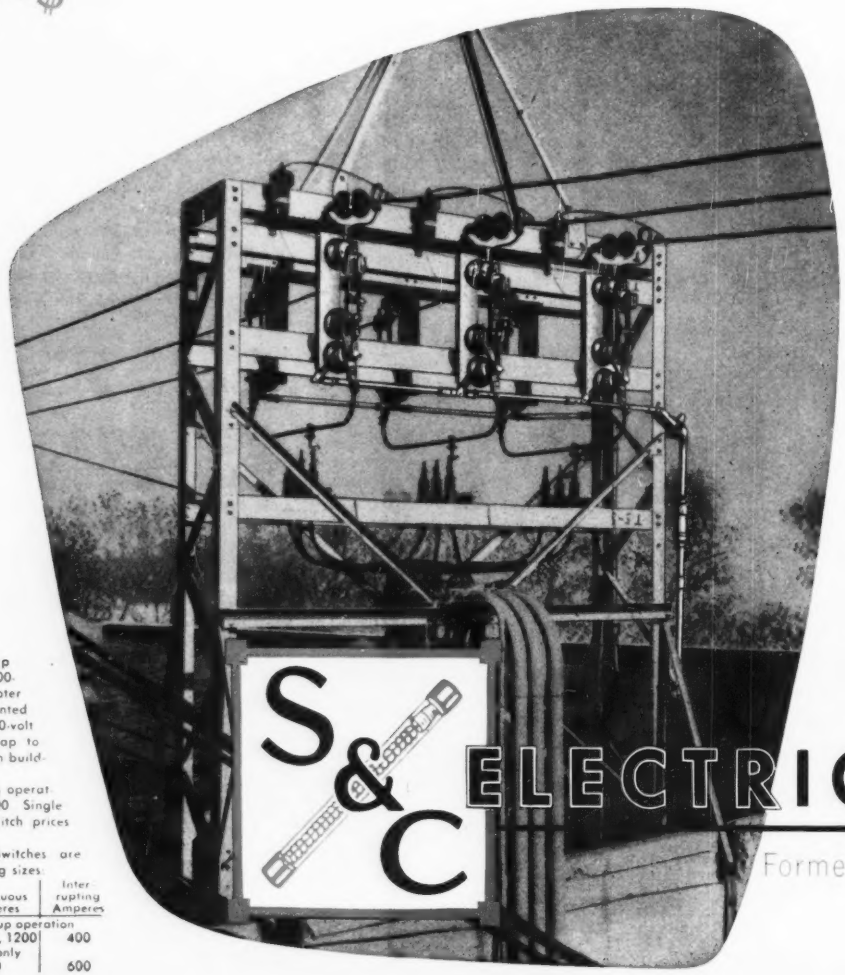


① Where Horn Gap Switches Are Inadequate

because they cannot, under all conditions, safely break magnetizing or charging currents; nor can they interrupt load currents

② Where Circuit Breakers Are Becoming Too Expensive

for non-automatic switching and short circuit protection



Two three-pole, group operated, 7,500-volt, 400-ampere, Alduti Interrupter Switches vertically mounted back to back, in 2,300-volt overhead loop circuit tap to load center substation in building below.

Price each, including operating mechanism, $490.00. Single pole stick operated switch prices as low as $65.00.

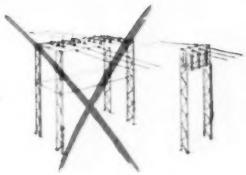
Alduti Interrupter Switches are supplied in the following sizes:

Volts	Continuous Amperes	Interrupting Amperes
For hook stick or group operation		
7500 & 15000	400, 600, 1200	400
For group operation only		
23000 & 34500	600	600

APPLICATIONS . . . . .

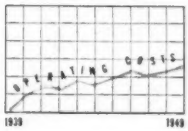
③ Where Structure Design Is Restricted

because horn gap switches can be mounted only in the horizontal upright position, need wide phase spacings, and always require an operating mechanism



④ Where Switching Sequences Are Too Complicated And Costly

because multiple operations—involving breakers, disconnects, and operating personnel—are required to isolate equipment or sectionalize circuits



ALDUTI INTERRUPTER SWITCHES

offer a proved and economical solution to such application problems.

Ten years of actual operating experience in thousands of installations, and many field trials under inordinately severe test conditions, have demonstrated convincingly the ability of these Interrupters to—safely and repeatedly—

Sectionalize either radial or loop distribution and subtransmission circuits, under either load or charging current conditions . . .

Switch load and magnetizing currents of transformer banks . . .

Switch charging currents of capacitor banks.

Because there is NO EXTERNAL ARCING during the operation of Alduti Interrupters: they need not be mounted only horizontally upright, but can also be mounted vertically, or horizontally underhung; hook stick operation can be employed where economy dictates; and phase spacings can be reduced to 18 inches for the 7,500-volt and 39 inches for the 34,500-volt switches. Hence structures can be smaller, connections simpler, and construction cost can be reduced below that of installing horn gap switches. Also, Alduti Interrupters can be installed in cubicles, thus providing — even for subtransmission applications—enclosed "packaged-type" switches, thereby permitting the complete enclosure of all components of a unit-type substation.

When combined with S & C Power Fuses, Alduti Fused Interrupters also provide short circuit protection with fault current interrupting ability up to 40,000 amperes asymmetrical, thus making possible the elimination of expensive circuit breakers where automatic switching is not required.

OPERATING, CONSTRUCTION, AND MOUNTING DETAILS, INTERRUPTING RATINGS, AND FIELD TEST REPORTS WILL BE MAILED ON REQUEST

S & C ELECTRIC COMPANY
4425 Ravenswood Avenue
Chicago 40, Illinois

☐ Please send complete information on ..... 7.5 kv, ... 15 kv, ... 23 kv, ... 34.5 kv Alduti Interrupter Switches

☐ Have representative call

Name ..... Title .....

Company .....

Street & Number .....

City ..... Zone ..... State .....

COMPANY

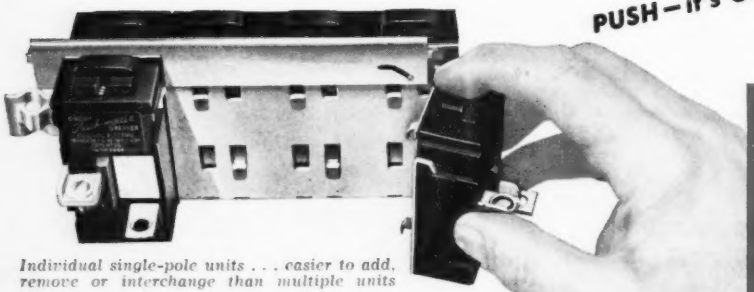
SCHWEITZER & CONRAD, INC.

ANNOUNCING *Pushmatic*

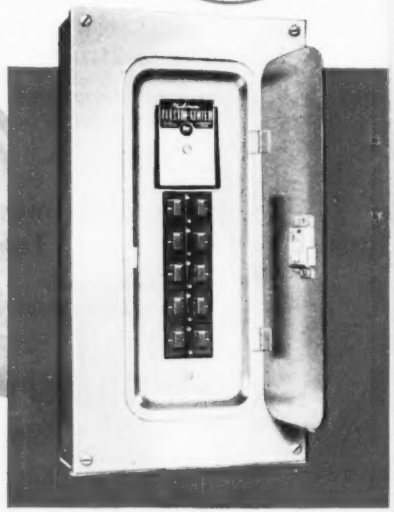
PUSH—it's ON!

PUSH—it's OFF!

PUSH—it's ON again!



Individual single-pole units . . . easier to add, remove or interchange than multiple units



Beautifully styled—Functionally perfect!

featuring . . .

PUSH-BUTTON CONTROL and AUTOMATIC PROTECTION for ELECTRIC CIRCUITS

NOW BULLDOG'S revolutionary, new *Pushmatic* gives you *positive* finger-tip control and *automatic protection* against overload and short circuits!

A push of the finger makes or breaks the circuit. There's no resetting manually when the circuit is broken by short or overload. Just PUSH—and service is restored.

Pushmatic is compact, sturdy, simple . . . the most versatile and flexible unit available today. It will meet *every* new or changing load condition.

And *Pushmatics* are easy to install. There are no complicated group mountings . . . individual single-pole units make additions and changes a simple matter.

There are four types of *Pushmatics:* THERMAL ONLY, THERMAL MAGNETIC, or either of these types with AMBIENT COMPENSATING FEATURES. All are identical in size and contour, in ratings of 15, 20, 30, 40 and 50 amperes, 120 V., 1 pole, or 120-240 V., 2 poles, AC. All are interchangeable for rating and type.

Find out about *Pushmatic's* outstanding features before you specify or buy any circuit breaker.

BullDog Electri-Centers with *Pushmatic*

NEW, BEAUTIFULLY STYLED LINE OF PROTECTIVE CONTROL CENTERS

THESE sensational, new ELECTRI-CENTERS, featuring *Pushmatic*, provide electrical control centers that are the last word in efficiency and protection.

They are attractive, compact, simple . . . easy to wire. There's plenty of gutter room even in the smallest cabinets.

With ELECTRI-CENTERS there are no fuses to buy, no complicated operations or installation techniques to remember. You get versatility and adaptability, ease of installation and operation *never before obtainable in any panelboard.*

See the new ELECTRI-CENTERS at first opportunity, or send in the coupon today for *Pushmatic* Bulletin #493. This descriptive bulletin, liberally illustrated, contains complete information and prices on BullDog ELECTRI-CENTERS and the new *Pushmatics.*

BULLDOG ELECTRIC PRODUCTS COMPANY

Detroit 32, Michigan—Field offices in all principal cities
In Canada, BullDog Electric Products of Canada, Ltd., Toronto

BULLDOG

HEADQUARTERS FOR ELECTRICAL DISTRIBUTION

BULLDOG ELECTRIC PRODUCTS CO.
Detroit 32, Michigan

Please send me your *Pushmatic* Bulletin #493 giving full information and prices on your *Pushmatic* ELECTRI-CENTERS.

Name_____

Company_____

Street Address_____ Zone_____

City and State_____

✓ Check these NEW Features

- Positive protection against overloads and short circuits
- Push "ON" and "OFF" for normal manual switching. Push "ON" after automatic tripping—no so-called reset position.
- Trip-free of the handle
- All types and ratings interchangeable, quickly, easily
- Permanent calibration by amperes in one precision-formed part

CONSULT THE FOLLOWING PACIFIC COAST REPRESENTATIVES:

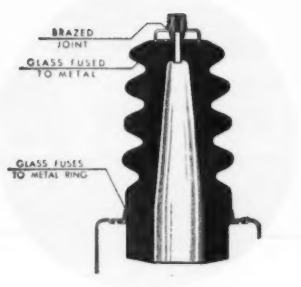
Coast Electric & Manufacturing Co.
1720 N.E. Sixth Avenue Tel. Garfield 2844
Portland 12, Oregon

Safety Switchboard Company
1445 Stevenson St. Tel. Hemlock 1-2470
San Francisco 3, Calif.

Mullenbach Electrical Manufacturing Co.
2300 East 27th Street Tel. Logan 5-5331
Los Angeles 11, Calif.

Today Price is lowest in history

AND RELIABILITY THE HIGHEST!



Glass bushings have become one of the most talked-about features of G-E capacitors. These bushings, with the glass fused to a metal ring and the metal ring welded to the case, provide a permanent hermetic seal. Their high mechanical strength combined with this permanent hermetic seal, is improving still further the remarkable long-time record of dependability of G-E capacitors.

Thanks to a recent price cut on G-E 25-kvar units, capacitor prices per kvar are today the lowest in history.

And, while prices have steadily decreased since 1930, reliability has gone steadily up. Today, therefore, capacitors are one of the most thoroughly reliable pieces of equipment that can be placed on central station lines.

Concretely, here's what this means to you: Capacitors, which can be installed at less than ten dollars per kilovar, are—without question—one of the most worthwhile buys an electric utility can make. They can help you deliver more kilowatts—right now, in a matter of weeks. And since they normally constitute the *lowest-cost* method of increasing kilowatt capacity of generating plants, transmission lines, and transformer banks, they provide the way to "average down" over-all investment per kilowatt. ***Apparatus Department, General Electric Company, Schenectady 5, N. Y.***

GENERAL ELECTRIC

407-1

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

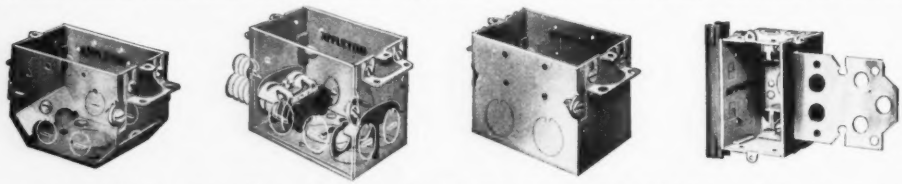
Complete APPLETON Line

Solves 15,000 wiring problems

FOR EXAMPLE

3¼ AND 4 INCH OCTAGONAL BOXES—4 AND 4 11/16 INCH SQUARE BOXES—WIDE SELECTION OF COVERS

FOR EXAMPLE

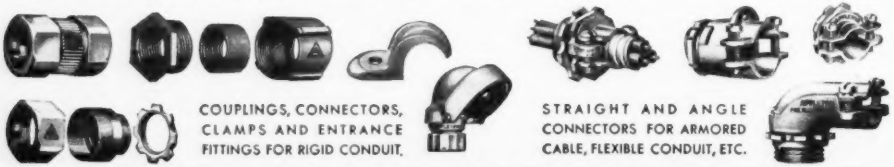


SWITCH BOXES, VARIOUS DEPTHS, WITH OR WITHOUT CLAMPS AND BRACKETS

FOR EXAMPLE

COUPLINGS AND CONNECTORS, ENTRANCE FITTINGS, CLAMPS, ETC. FOR ELECTRICAL METALLIC TUBING

FOR EXAMPLE



COUPLINGS, CONNECTORS, CLAMPS AND ENTRANCE FITTINGS FOR RIGID CONDUIT.

STRAIGHT AND ANGLE CONNECTORS FOR ARMORED CABLE, FLEXIBLE CONDUIT, ETC.

END TODAY for big Appleton Catalog, listing and describing the more than 15,000 items in the Complete Appleton Line. Gladly mailed on request to any user of electrical fittings.

"Standard for Better Wiring"

Completeness of the Appleton Line is outstanding . . . just as expert design and precision manufacture are outstanding qualities of all the more than 15,000 items Appleton makes.

The products illustrated above are examples—products from Appleton's own foundries and fabricating plants, skilfully designed by Appleton engineers, and recognized throughout the electrical industry as "STANDARD FOR BETTER WIRING."

In the COMPLETE APPLETON LINE is every fitting required for every job. That means selection is simplified . . . work goes more smoothly because the correct fitting for every turn and terminal is ready when you want it. Have the backing of the complete Appleton line, of superior Appleton design, and sturdy, dependable Appleton quality. Specify Appleton fittings for every job.

Sold Through Electrical Wholesalers

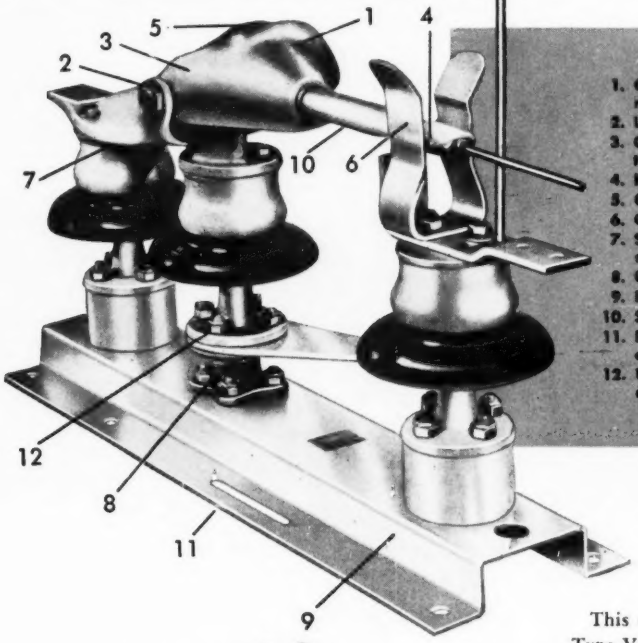
APPLETON ELECTRIC COMPANY
1709 WELLINGTON AVENUE • CHICAGO 13, ILLINOIS
LOS ANGELES 12, 100 N. Santa Fe Ave.
SAN FRANCISCO 1, 655 Minna Street
SEATTLE 9, 115 Ray Street
DENVER 2, 1921 Blake Street

APPLETON

CONDUIT FITTINGS • LIGHTING EQUIPMENT • OUTLET AND SWITCH BOXES • EXPLOSION-PROOF FITTINGS • REELITES

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



1. Completely-enclosed hinge-end mechanism.
2. Live-side bearings, lubricated for life.
3. Completely-enclosed solid bridging contact at hinge end.
4. High-pressure line contacts.
5. Only three moving parts.
6. One-piece break jaw.
7. Simplified and enclosed counterbalancing spring.
8. Greaseless, rotating insulator bearing
9. High-strength, bent-plate steel base.
10. Single tube blade.
11. Flat mounting surface with no downward extensions.
12. Universal operating mechanism for group operation.

LOOK CLOSELY!

Do your disconnecting switches have these features?

Check the above features closely. Each one *alone* means a better switch for your money. Install the Westinghouse Type V and you get them *all*.

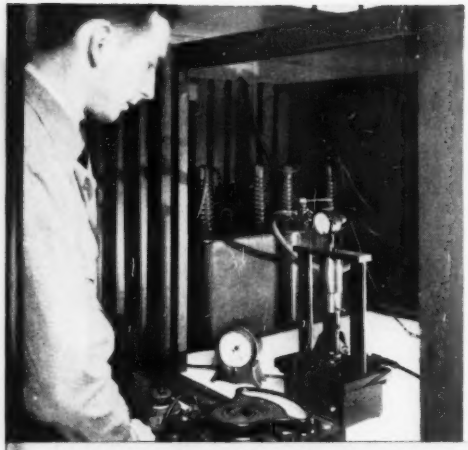
This combination of vital features makes the Type V the leader of the switch field in dependability, economy and low maintenance. Get the benefits of experience and top-grade switch design in *your* system. Install the Westinghouse Type V.

For complete information on the Type V, or on the entire Westinghouse switch family, get in touch with your nearby Westinghouse office or distributor. Ask for B-4241 and B-4242. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-60699

Westinghouse

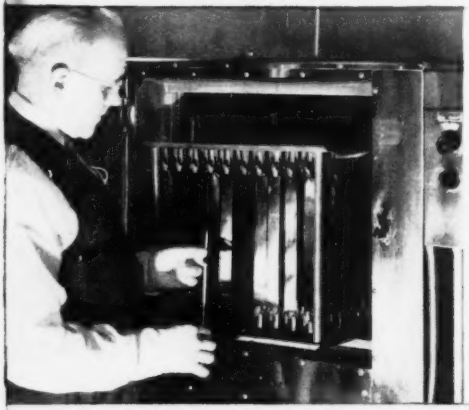
TYPE V
DISCONNECTING SWITCHES

If you need but are cramped for space



Samples from each lot are tested for dielectric strength and are required to withstand 1000 volts per mil at room temperature.

Hot oil test. Varnished cambric is subjected to a severe heating test—hot petroleum at 150°C. for a period of 15 minutes. After cooling the varnished coating must not be softer nor more tacky than before immersion.



Precisely controlled ovens subject varnished cambric to aging tests far in excess of normal requirements.

The cambric tape is critically examined for gauge, thread count and tearing strength. Tensile strength lengthwise must not be less than 3000 psi.

more power

—use American Varnished Cambric Cables

Maximum power, minimum size, lower costs and ease of installation—these are the chief advantages of U·S·S American Varnished Cambric Cables.

● How to get the most power from the smallest cable is a problem continually being faced by electrical engineers. The improved varnished cambric wires and cables offer a happy solution in many cases.

The varnished cambric used by American Steel & Wire Company is being recommended for operating temperatures up to 85°C. (185°F.). In this respect it is notably superior to rubber . . . permits greater current carrying capacity. It also has higher dielectric strength which results in cables of smaller outside diameter. In multiple conductor cables, part of the insulation may be applied in the form of a belt, thus reducing outside diameter still further. These features permit varnished cambric cables to carry substantially more power for their size than rubber insulated cables.

The fact that oil and grease do not damage varnished cambric insulation makes it widely used for motor and generator leads, transformers, regulators and oil circuit breakers. It is particularly desirable for heavy power lines in power plants, factories and mills.

With the protection of a lead sheath, (Type PS Strand Shielding used over 2KV) varnished cambric can be used where continuous exposure to moisture is expected. Combined with asbestos insulation, it can be used for extremely hot locations.

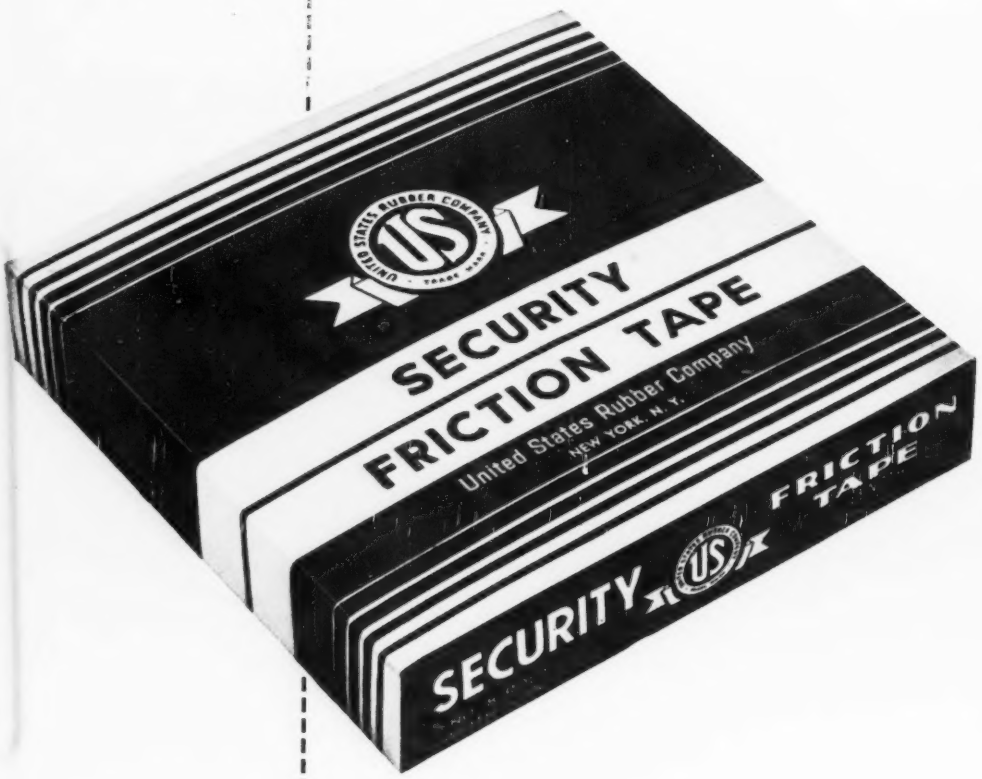
For complete information on the many types of U·S·S American Varnished Cambric Cables, write for our technical booklet.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS American Varnished Cambric Wire and Cable

UNITED STATES STEEL

A SAFE AND STEADY SELLER



"SECURITY"—THE FRICTION TAPE MADE BY

Instinctively—electrical contractors reach out for things they know and trust.

They trust "Security" because they *know* it stands up in service. It has high tensile strength. It is free of pin holes. It does not unravel when unwound from the roll. It tears straight. And it has a strong, rubbery adhesive that sticks and *holds*.

Is your stock of Security adequate?

U.S. RUBBER
SERVING THROUGH SCIENCE

TAPE DEPARTMENT
U. S. RUBBER BLDG., ROCKEFELLER CENTER, NEW YORK 20, N. Y.

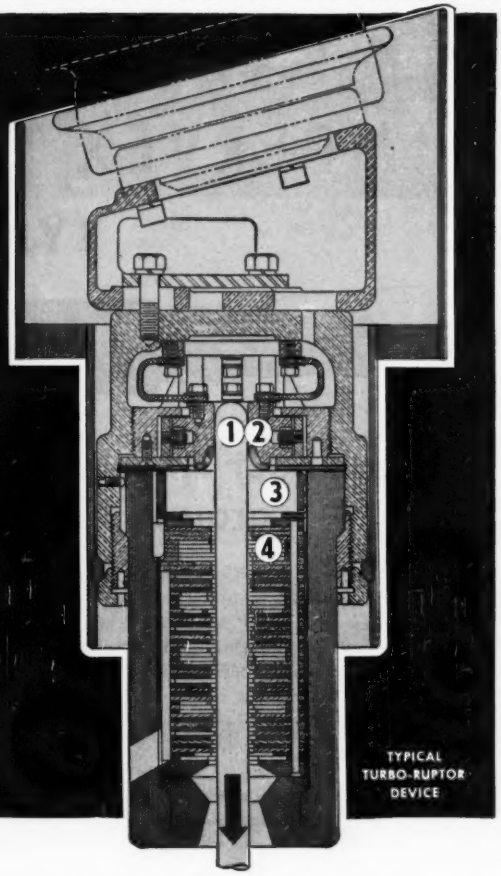
UNITED STATES RUBBER COMPANY

ALLIS-CHALMERS POWER OIL CIRCUIT BREAKERS

How Arcs Speed Circuit Interruption

IN RUPTOR DEVICES

SIMPLIFIED DESIGN ASSURES HIGH-SPEED PERFORMANCE WITH SHORT ARCING TIME



TYPICAL TURBO-RUPTOR DEVICE

WHEN BAYONET contact (1) drops from the stationary contact (2), an arc is initiated in the oil-filled pressure chamber (3). Pressure from the gas generated by the arc causes the oil to swirl down dual helical throat passages (4). These restricted, converging passages force jets of oil into the elongating arc and against the moving bayonet arcing-tip. This turbulent action disperses the arc and waste products, completing interruption at an early current zero.

The simplified *Ruptor* interrupting device has no moving parts to bind or fail. Stationary contact segments provide self-wiping, high pressure contact with the movable bayonet — for low resistance and low temperature rise.

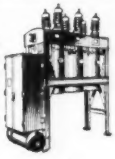
Check with your nearby A-C representative for the complete story of this feature . . . and others of Allis-Chalmers oil circuit breakers — in ratings to meet all your needs. Or write direct. A-2728

Ruptor and *Turbo-Ruptor* are Allis-Chalmers trademarks.

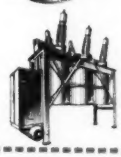
ALLIS-CHALMERS, 939A SO. 70 ST.
MILWAUKEE, WIS.

STANDARD RUPTOR OR TURBO-RUPTOR DEVICES ARE USED ON THESE ALLIS-CHALMERS OUTDOOR OIL CIRCUIT BREAKERS

TYPE BZO-160 . . . 69 kv to 230 kv — 5-cycle opening, 20-cycle reclosing.



TYPE FZO-150 . . . 14.4 kv to 46 kv — 8-cycle opening, 20-cycle reclosing



TYPE FZO-151 . . . 69 kv — 5- or 8-cycle opening, 20-cycle reclosing

TYPE O . . . 14.4 kv to 23 kv—8-cycle opening, 35-cycle reclosing

ALLIS-CHALMERS

Pioneers in Power and Electrical Equipment From Generation Through Utilization

CRESCENT
IMPERVEX TRENCHCABLE

TYPE RR

Your Best Answer for Dependable Underground Cable at Low Cost

CRESCENT IMPERVEX TRENCHCABLE is a versatile low-cost, non-metallic armored cable for aerial and direct earth burial installations as well as for use in conduit and ducts, indoors and outdoors. The use of multi-conductor IMPERVEX TRENCHCABLE in place of multi-conductor lead-covered cable not only will show substantial savings in the initial cost of the cable but because of its light weight and ease of installation, splicing and terminating will result in installation economies also. Even greater savings can be obtained when IMPERVEX TRENCHCABLE is used for direct earth burial as it does not require conduit or duct for such installation.

CONSTRUCTION

Insulation on each conductor is CRESCENT IMPERVEX, a special moisture-resisting, heat-resisting, long-life compound possessing excellent dielectric stability in the presence of water. Over the insulation on each conductor is applied a color-coded, moisture-resisting covering. The overall armor is a tough, vulcanized NEOPRENE sheath which completely fills the interstices between the cabled conductors as well as providing a protective sheath over the insulated conductors.

FEATURES

Lighter in weight, more flexible, easier to handle and install than metallic covered cables. No fibrous coverings to rot or deteriorate. The NEOPRENE armor is flame-retarding, resistant to impact, abrasion, grease, oils, ground water, soil acids and alkalies and practically unaffected by exposure to sunlight, air and weather.

USES

For light and power circuits for industry, utilities, mines, railroads, airports, ball parks, etc.

CRESCENT
WIRE & CABLE

OVER 60 YEARS EXPERIENCE

CRESCENT INSULATED WIRE & CABLE CO.

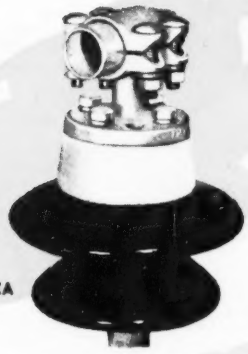
TRENTON, N. J.

PACIFIC ELECTRIC
BUS FITTINGS
and BUS SUPPORTS

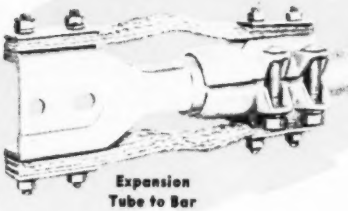
Made by Specialists in the Manufacture of High-Voltage Oil Circuit Breakers and Air Switches

VEX

VKA



VXA



Expansion Tube to Bar

Pacific Electric Features*

Cast to Size . . .
To insure highest conductivity when applied to tubes having the usual variation of diameter within tube-manufacturer's tolerance limits.

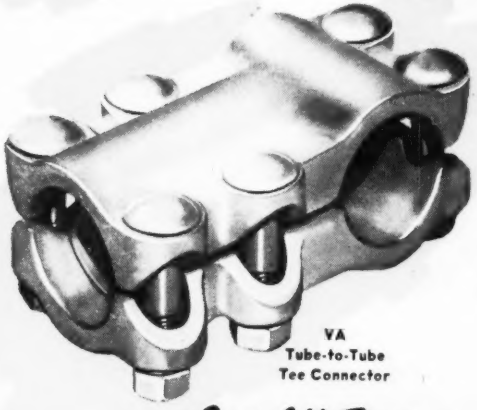
Bolts Cannot Drop Out During Installation . . .
Special retainers hold bolts firmly in caps.

Rounded Edges . . .
Reduce junction-fatigue failure.

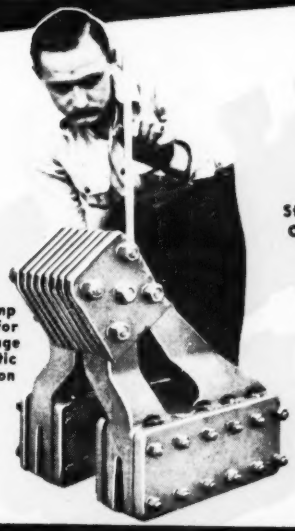
One-Wrench Tightening . . .
Oval-shank bolts in oval holes prevent shank from turning.

Pressed-On Ferrules . . .
Expansion flexibles have precision-made ferrules applied under 60-tons pressure.

*Applying to most designs of copper-alloy fittings; those for aluminum conductor differ slightly.



VA
Tube-to-Tube Tee Connector



20,000-amp Terminal for Low-Voltage Electrolytic Installation

Stud to Cable

Just Off the Press:
Ask for new Catalog 710 . . . 28 pages of specifications and dimensioned illustrations of Pacific Standard-Line of Bus Fittings and Supports.

Get All Facts . . .

Call

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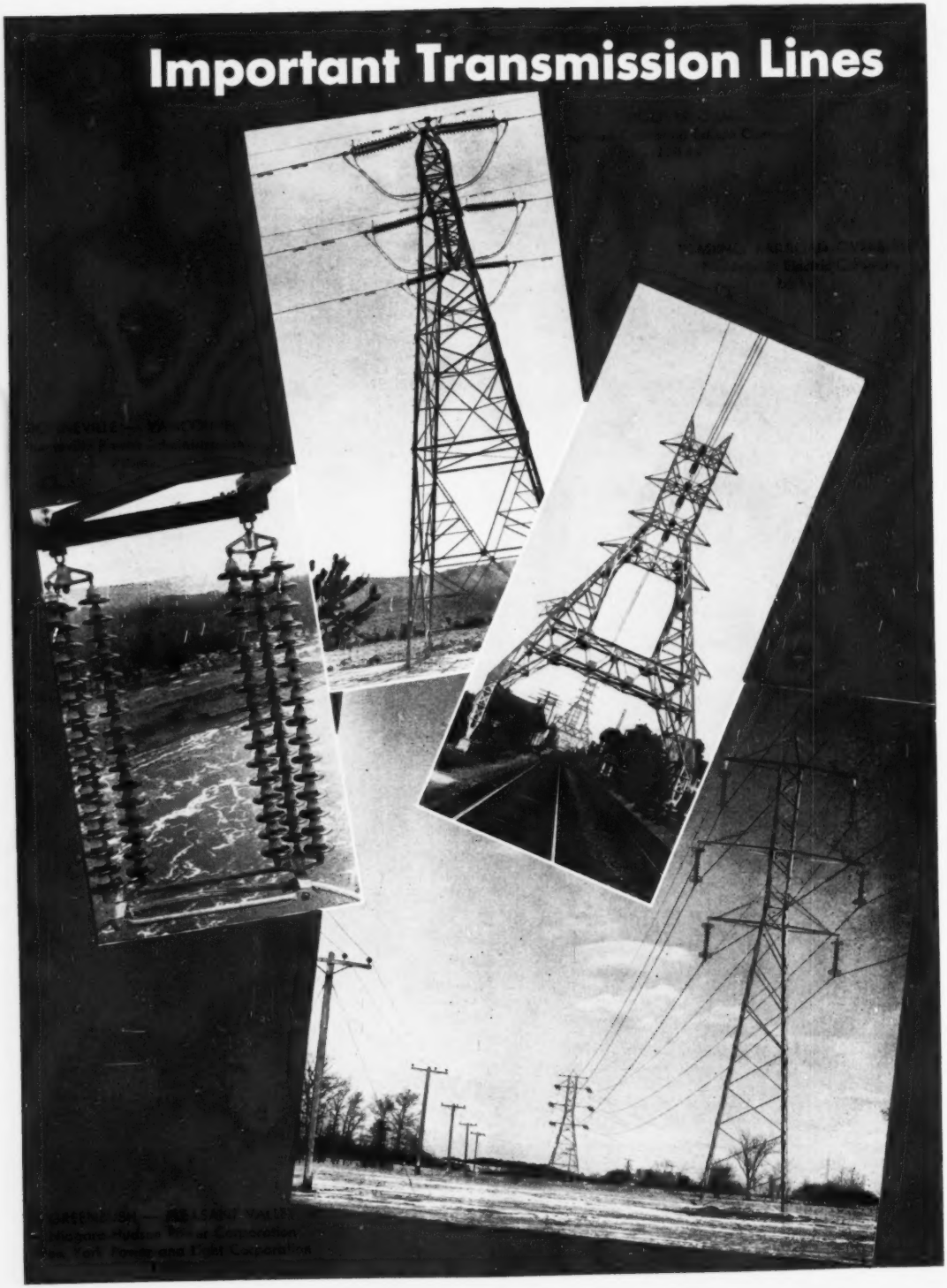
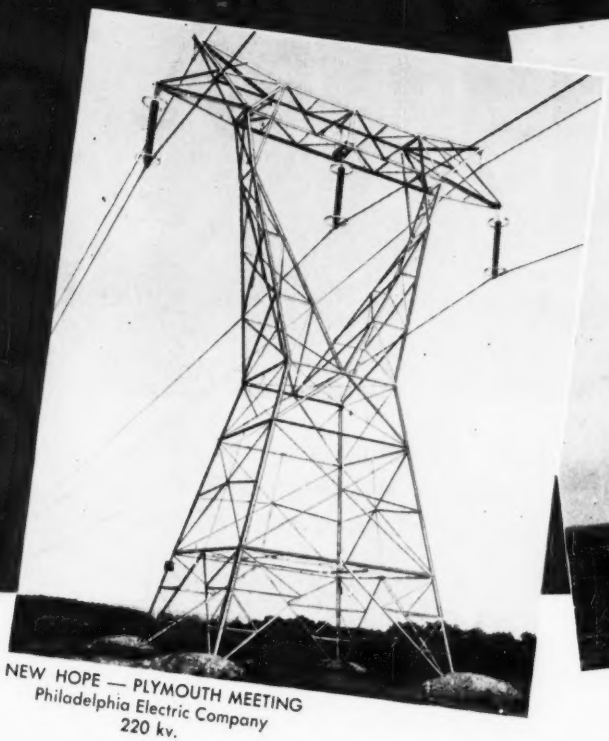
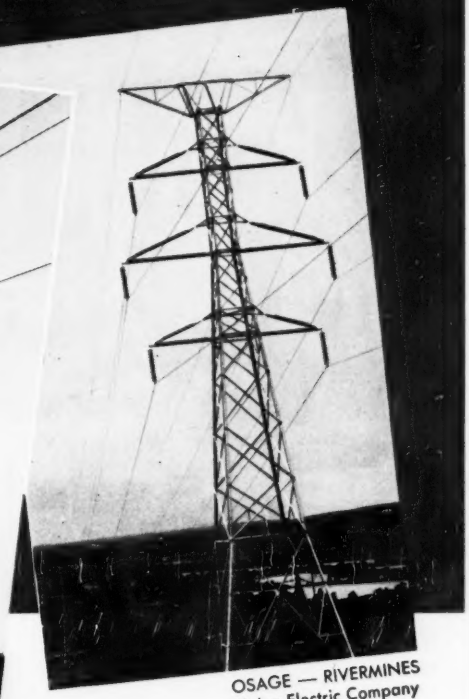
Important Transmission Lines



Use Forged Hi-Line Hardware



NEW HOPE — PLYMOUTH MEETING
Philadelphia Electric Company
220 kv.



OSAGE — RIVERMINES
Union Electric Company
138 kv.

Hardware for important transmission lines should have a record of dependable service as evidence of good engineering and materials.

BTC drop forged steel Hi-Line clamps and fittings have proved their superior qualities in actual use through years of service on these and many other outstanding transmission lines. Over rugged terrain, river crossings, high altitudes, and in all kinds of weather, BTC forged hardware is still giving entirely satisfactory service.

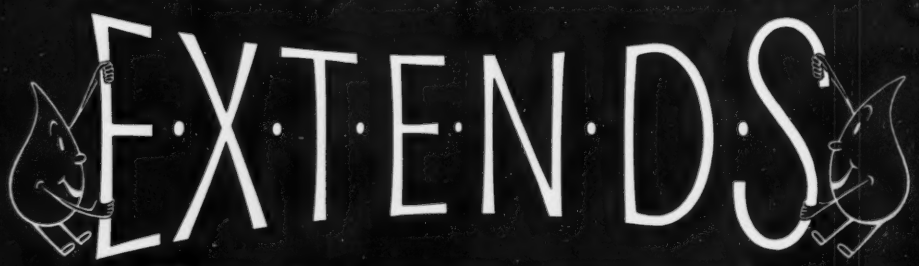
For proper design and long-run economy in maintenance, specify BTC drop forged steel Hi-Line hardware for your transmission line.

6200 Series Clamp

Sold only through your insulator manufacturer

THE BREWER-TITCHENER CORPORATION
CORTLAND, N. Y.

This heavy duty lubricating oil



Time between overhauls

Because it's fortified against ***ALL*** the inside causes of reduced engine life

SHELL TALONA OIL

FOR ALL YOUR HEAVY DUTY ENGINES

SHELL

To add hundreds of extra hours to the previous running time between engine overhauls . . . yes. Shell scientists aimed high when they started to develop a new heavy duty oil. They knew that such an oil must overcome not just some of, but *all* the inside causes of reduced engine life: sludge . . . carbon . . . lacquer . . . acids . . . and their end-product, wear.

To make a long story short — and sweet — Shell scientists found a formula that made even their original ambitious goal seem modest: Shell Talona Oil.

In all types of heavy duty, high speed engines — both gasoline and Diesel — Shell Talona Oil has surpassed every accepted standard for heavy duty oils. It has kept sludge to a harmless minimum; protected alloy bearings from corrosion; left pistons and rings virtually free of carbon and lacquer; kept wear so small it was hard to measure. All to the end of keeping such engines going longer . . . and more efficiently.

Why don't you find out what Shell Talona Oil can do for your heavy-duty equipment?

As you **MODERNIZE** *street and highway lighting –*

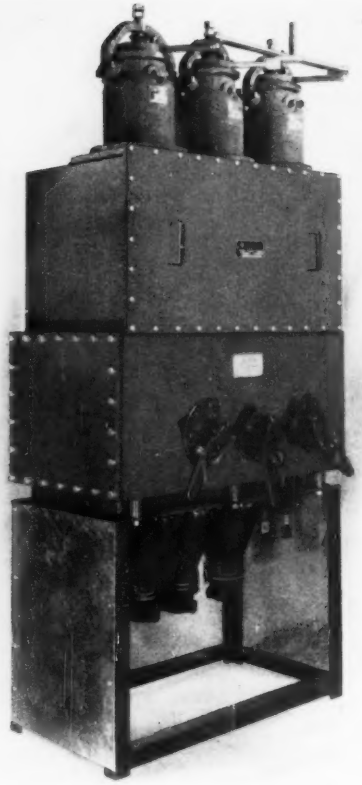
Standardize on **HUBBARD** *lighting hardware*

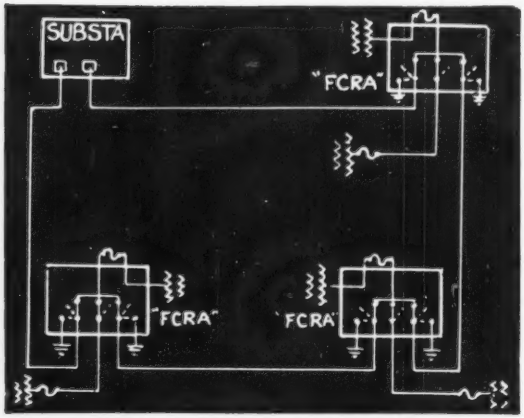
Your present street or highway lighting system can be matched—
or new fixtures to meet your exact requirements can be furnished from
HUBBARD stocks or from HUBBARD'S extensive engineering and
manufacturing facilities. And every HUBBARD product carries the extra
protection of hot double-dip Galvanizing for permanent rust resistance.
That's why it pays to call HUBBARD first for all street lighting hardware!
Distributed through Graybar Electric Company, Inc.,
and General Electric Supply Corporation.

HUBBARD AND COMPANY

PITTSBURGH OAKLAND, CALIFORNIA CHICAGO

HANG THE LOAD ON HUBBARD HARDWARE

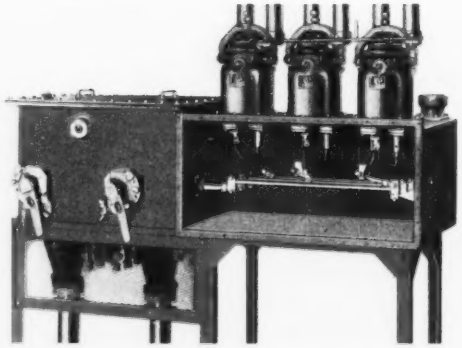




Save SPACE, MATERIAL AND INSTALLATION LABOR *by using* G&W TYPE "FCRA" OIL FUSE-SWITCH UNITS *combination of-*

Type "FC" Oil Fuse Cutouts
Short circuit protection and load break disconnection of adjacent transformers.

Type "RA" Oil Disconnects
Load break sectionalization of multiple feed and branch circuits. (Ground-Test outlets for feeders.)



● Here's real forethought—planning in advance for easier installation of equipment—to provide for safe, economical and trouble-free distribution system flexibility.

The illustrations are typical examples. Other forms are often made to meet special needs. Automatic operating mechanisms are available for load break oil switch transfer from preferred and emergency feeders.

Send us cable data with an outline of your distribution problem. We will reply promptly with sketches and prices. There's no obligation on your part.

G&W ELECTRIC SPECIALTIES

7780 DANTE AVENUE CHICAGO 19, ILLINOIS

In Canada, POWERLITE DEVICES, Ltd., Toronto

Potheads • Boxes • Oil Fuse Cutouts • Oil Switches • Splicing Kits

New G-E Wiring System Offers Unlimited Possibilities In Modern Lighting Control

Multiple Switching from Many Locations Available at Low Installation Cost With G-E Remote Control

Switch your garage lights ON or OFF from any room in your home—in hospitals, give every patient a light switch next to his bed—in industrial plants and commercial buildings, let every night watchman have a centralized bank of switches for all lights in his area. These are just a few of the many possibilities that can be brought about by the new remote control system, recently announced by the General Electric Company.

Easy to Install

Using existing methods for wiring all power circuits, the General Electric remote control system requires no new materials or techniques except in the switching circuit itself. In this circuit a small, low-voltage relay does the actual switching. Control of this relay can be placed practically anywhere in a building, simply by installing lightweight wires from the relay to conveniently located wall switches, specially developed for this purpose. "Easy as wiring a doorbell," is the way one observer described this circuit.

Because this new system cuts the cost of materials used in multi-switch applications, because it makes possible a large number of controls on any individual circuit, General Electric remote control clears the way for wide use of multi-switch control in structures of all types.

Keeps Costs Down

In residential wiring, this new system means real "dream-home" electrical control even in residences where costs must be cut to the bone. Simple applications include the example of garage lights given above—also attic fan and cellar light controls in various parts of the house. In the completely modern house, all lights and outlets can be controlled from various locations.

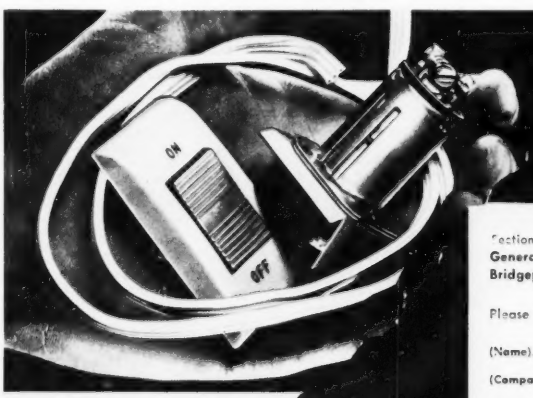
In dormitories, institutions, and commercial buildings, General Electric remote control can provide an effective centralized system for lighting control. Wherever "lights-out" regulations are in effect, a master panel of remote control switches can be used to enforce these regulations for an entire building or a whole floor. In commercial structures or plants, a similar system can be used to turn out lights left on after hours. Commercial and industrial operations can profit by the over-all multi-switch control offered by this system.

Offers New Ideas

To everyone concerned with building and remodeling, this new system offers a completely new range of ideas on flexibility in the use of electricity. To the architect, it means a new era in electrical convenience in structures of all sizes and types. To the buyer and the investor, it means increased workability and extra value, now and in the years to come. To the electrical contractor, General Electric remote control offers a vast, new field for his services.

To answer questions on the applications of General Electric remote control—to explain the procedure and the materials required—the General Electric Company has prepared an informative booklet on the subject. This booklet is a valuable guide for everyone interested in this new system. To get your copy early, simply fill out the coupon and mail it today.

Here are the essential components of the new General Electric remote control system: the switch, the small transformer (not shown), the relay, and the lightweight No. 18 wire. All accessories necessary for the system are manufactured by General Electric and sold through your General Electric Construction Materials distributor.



Get Ready to Get Your Share
OF THIS BIG NEW MARKET
Mail Coupon Now

Section D27-625
General Electric Company
Bridgeport 2, Connecticut

Please send me your new booklet on General Electric remote control.

(Name)_____ (Title)_____
(Company)_____
(Street)_____
(City)_____ (Zone)_____ (State)_____

GENERAL ELECTRIC

Report to Power Engineers

Production of New Standardized Switchgear Now Greatly Increased in Allis-Chalmers Switchgear Plant.

Outdoor Switchgear Redesigned for Greater Accessibility, Better Service . . . Welded-In Floor Plates, Full Length Instrument Panels, Better Ventilation, Increased Compartmention.

New Low Voltage Switchgear Simplified. Improved Breakers, Easier Access for Maintenance.

Check This Modern Line of Allis-Chalmers Switchgear For YOUR System Protection Today!

YOU CAN SELECT standardized switchgear for your system quicker with the help of Allis-Chalmers engineers. *Standard* Allis-Chalmers Switchgear is *prefabricated*, wired and assembled. Easy to install, it permits future expansion with a minimum of engineering.

Sturdy, welded steel framework is sheet steel enclosed. Safety-engineered compartments insure complete operating protection.

Circuit breakers are designed for fast circuit interruption, long-life operation. Greater accessibility, elimination of excess component parts means fewer linkages, fewer operating parts. Maintenance is simplified.

These features are a product of 50 years of experienced engineering — a first requirement in reliable protective equipment.

Result: A-C in cooperation with your engineers can advise you on equipment for your fault current, voltage, temperature and other specific requirements.

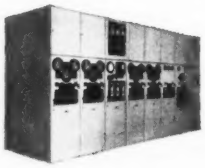
Mail coupon or call your nearby A-C Sales Office for further details.

Ruptair and *Raptor* are Allis-Chalmers trademarks.

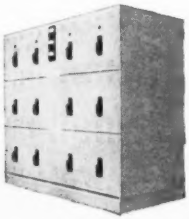
Modern Design SWITCHGEAR:

VERTICAL LIFT

5 kv and 15 kv — interrupting capacities through 500 mva. Metal-clad, complete with instruments, instrument transformers, buses, circuit breakers, and control wiring. Used on Ruptair, Oil or Air Blast circuit breakers.



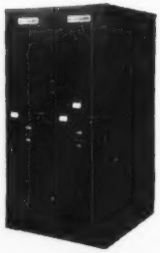
HORIZONTAL DRAWOUT



600 volts ac and 250 volts dc. Interrupting ratings to 100,000 amperes. Dead front, metal-enclosed. Pantograph frame for easy breaker withdrawal. Protective barriers and devices. Single main bus for incoming connections, greater accessibility, and ready inspection.

CUBICLE

15 kv — interrupting capacities over 500 mva. Complete phase segregation with maximum protection for electrical equipment and operating personnel. Stationary air blast circuit breakers.



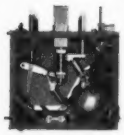
Pioneers in Power and Electrical Equipment From Generation Through Utilization

ALLIS-

on Allis-Chalmers Switchgear

Improved CIRCUIT BREAKERS:

AIR BLAST



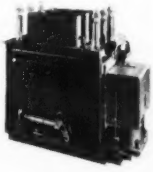
Clears circuits in minimum time. Interrupts arc in less than one cycle. Uses prestored air for operation. Primarily used with metal-clad, vertical lift switchgear. Rated at 15 kv, 500 mva and above.

LOW VOLTAGE AIR

Modernized G-25 and G-50 air circuit breakers for 600 volt service and below. Built for repetitive operation. Insensitive to shock and vibration; adaptable for light currents of low power factor.

The G-25 and G-50 meet all standardized requirements of NEMA, AIEE and other electrical requirements. Equipped with inverse time series overcurrent trip. Stationary or drawout construction. Manual or electrical operation.

MAGNETIC AIR



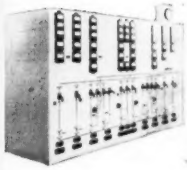
The "Ruptair" circuit breaker is designed for service of 5 kv, 250 kva and below. Individual phase barriers. Self-aligning finger type main disconnects have 360° contact. Completely oilless and self-contained. Employs horizontal contact separation for reliable arc extinction.

OIL

Oil tight enclosed mechanism of low inertia, straight line motion type. Wide application for central station and industrial service. Ideal for economy of space and operation. Equipped with Ruptors to reduce contact burning and oil deterioration. Silver plated main contacts, arc resistant arcing contacts. Oil and gas separator.

Many Types of SWITCHBOARDS:

DUPLEX



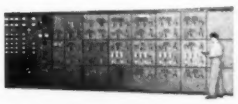
For centralized control — controls and instruments within easy reach of operator. Segregated relay and operating equipment. Front: control switches, indicating instruments, annunciators. Back: relays, recorders, test facilities. Wiring carried in special troughs, terminal blocks for quick connections, easy inspection.

BENCHBOARD

All equipment in front. Meters, instruments, relays mounted on vertical panel. Control switches, rheostats, etc. mounted on bench section. Doors or removable plates give access to rear wiring and connections. Dead front.

OPEN

Standard switchboard panels for specific applications . . . for control of generators, motors, transformers, rectifiers, feeder lines for all municipal and industrial applications where space is limited and enclosed types not warranted. Includes necessary accessories on front panel. Ready access to rear wiring and terminal blocks.



WRITE OR CALL FOR INFORMATION

ALLIS-CHALMERS, 939A SO. 70 ST.
MILWAUKEE, WIS.
Please send me information on:

.....

Name.....

Title.....

Company.....

Address.....

A-2702

A-C ALLIS CHALMERS

CHALMERS

In 1924, Okolite insulation was first used by utilities and industrial plants. Since then, Okolite insulated cables have delivered outstanding performance consistently in a wide variety of exacting services.

24 YEARS OF SERVICE PROVE . . . .

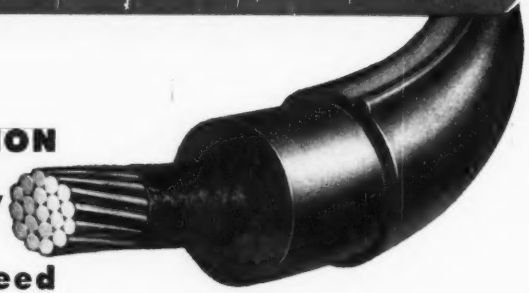
Hundreds of miles of Okolite-insulated cables used in high voltage service include insulated power cables operating at voltages as high as 35,000 between phases.

HIGH VOLTAGE APPLICATIONS PROVE . . . .

In addition to high voltage a-c proof tests made as a matter of routine, Okolite-insulated cables pass d-c proof tests also—tests made at 4 times the a-c values.

SUPER VOLTAGE D-C TESTS PROVE . . . .

OKOLITE INSULATION
gives the internal stability all *Long-Lived* cables need



No single part of a cable affects its life more certainly than does its insulation. No matter how a cable is outwardly protected, trouble can develop internally if the insulating medium loses stability, deteriorates in electrical values, absorbs moisture.

Not only does Okolite possess stable electrical characteristics plus moisture and ozone resistance but its heat resistance has been firmly established at 75 degrees C. conductor temperature under all kinds of service conditions.

Okonite's patented strip insulating method insures uniform wall thickness — an essential in high voltage cables. For details including Okolite advantages over lead-covered as well as ordinary rubber-insulated cables, write for Bulletin WE-1035 addressing The Okonite Company, Passaic, New Jersey.

7072

OKONITE SINCE 1878 **insulated wires and cables**

THE BEST CABLE IS YOUR BEST POLICY

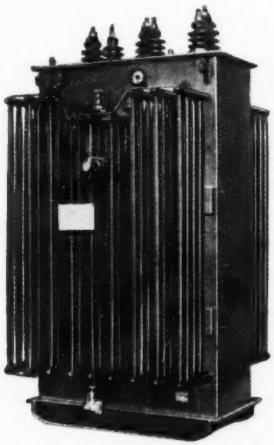
HERE'S GREATER ECONOMY IN POWER TRANSFORMERS

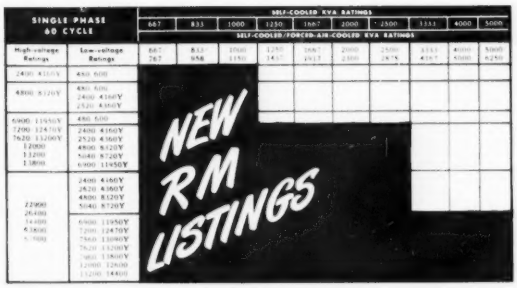
"RM" . . . Repetitive Manufacture . . . UNITS SAVE YOU TIME AND DOLLARS!

The "RM" power transformers listed at the right are standard designs that lend themselves to quantity production. The savings that result are passed on to you in shorter shipments and lower prices.

These "RM" units have E.E.I. NEMA preferred voltage ratings, and accessories in the most popular types and locations. Besides these standard items, additional high-voltage ratings and optional accessories are also available.

All this adds up to a flexibility that gives you more than 3000 standard ratings plus other optional ones a flexibility that offers you "RM" economy for practically all your small power transformer needs.





COMPLETE INFORMATION on the latest listings of RM transformers is in the hands of your G-E representative. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

401-4

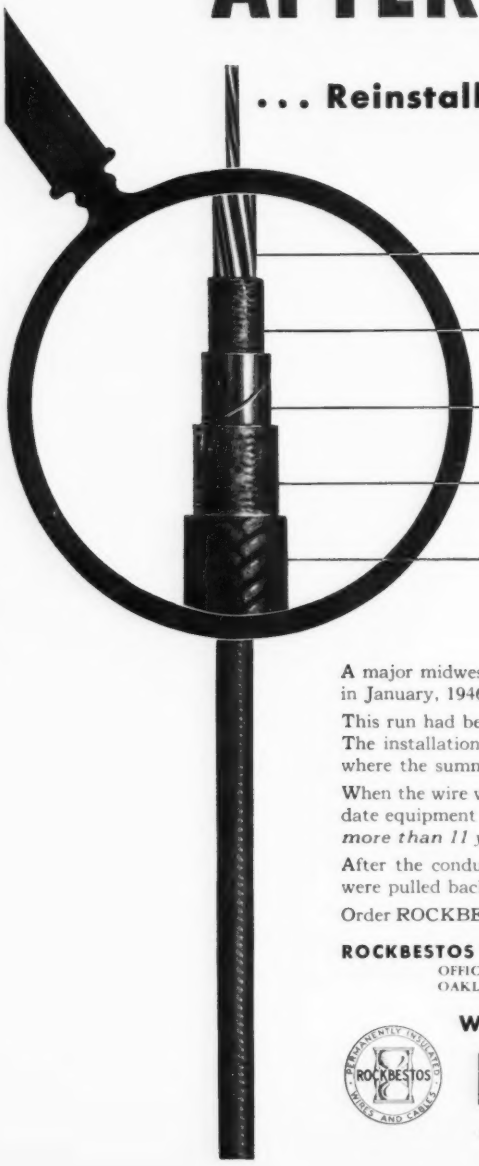
GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western Cities.

Cable pulled from conduit

AFTER 11 YEARS

. . . Reinstalled and back in use!



A major midwestern electric utility had occasion to relocate a conduit run in January, 1946.

This run had been wired with ROCKBESTOS A.V.C. cable in June, 1934. The installation was located in damper control circuits around the boiler, where the summer ambient is around 135°F.

When the wire was pulled out in order to relocate the conduit to accommodate equipment changes, the insulation was in excellent condition . . . *after more than 11 years of dependable service under severe conditions.*

After the conduit was relocated, the same ROCKBESTOS A.V.C. cables were pulled back in.

Order ROCKBESTOS A.V.C. by name. Install it. Then confidently forget it!

ROCKBESTOS PRODUCTS CORPORATION, NEW HAVEN 4, CONN.

OFFICE AND WAREHOUSE, OAKLAND MUNICIPAL AIRPORT, OAKLAND, CAL.; LOS ANGELES DISTRICT OFFICE, 6919 SAN FERNANDO RD., GLENDALE, CAL.

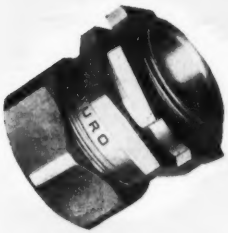
WIRES and CABLES by

ROCKBESTOS

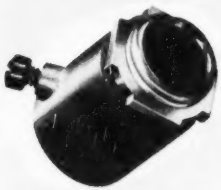
. . . . *dare to be better*

DURO

"The All-Steel Line"



WATERTIGHT FITTINGS



FLEX CONNECTORS

EXPLOSION PROOF UNIONS

INDENTOR FITTINGS

. . . A NAME YOU CAN BANK ON FOR FITTINGS YOU CAN DEPEND ON

✓ **Uniform Quality** . . . DURO Conduit Fittings are made to exacting standards on precision screw machines under supervision by fine craftsmen. Every detail is clean and properly gauged, all parts cadmium or zinc plated. Each DURO product exceeds the minimum standard required for approval by jurisdictional authorities.

✓ **A Full Line For All Your Needs** . . . DURO offers a complete size range of EMT Fittings . . . Threaded and Threadless Unions . . . Adapters . . . Reducers . . . Nipples . . . Explosion Proof Unions . . . Entrance Fittings . . . Combination Couplings . . . Locknuts . . . Bushings . . . Flex and Cable Fittings . . . and *all* other items needed to do the whole job—*all* made by *one* dependable Western Manufacturer.

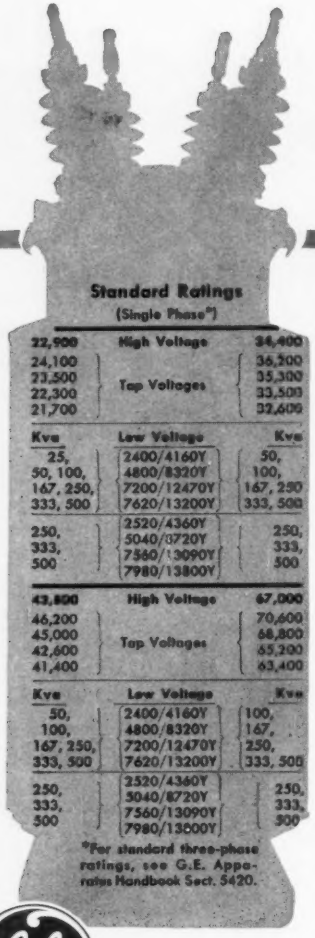
✓ **Lower Total Cost** . . . DURO quality costs no more in the purchase price and saves money through quick and easy installation, elimination of replacement expense and lowered maintenance.

✓ **Immediate Delivery** . . . Made in the West by a leading Western Manufacturer, DURO Approved Fittings are stocked by qualified wholesalers throughout the West who will make immediate delivery of every one of the many Duro Products to any place in the West in any quantity desired. Catalog of our complete line will be furnished on request.

MULTI-PRODUCTS MANUFACTURING CO.
2040-46 SANTA FE AVENUE, LOS ANGELES 21, CALIF.

"IT'S ALWAYS BEST IF IT'S MADE IN THE WEST"

Here are the NEW STANDARDS in G-E high-voltage distribution transformers



Now listed. Now in production.

NOW IN LINE WITH "PREFERRED VOLTAGES"

The table at the left lists the ratings which are now standard for General Electric distribution transformers with high voltages above 15,000. These voltages, both on high and low sides, are in accordance with recommendations of the E.E.I.-NEMA Joint Committee on Preferred Voltages. Standard taps are no longer based on a percentage of rated high voltage. Instead, there are two tap voltages above and two tap voltages below rated high voltages—all listed as "preferred."

A TWO-YEAR-OLD STORY—BROUGHT UP TO DATE

This move is a continuation of General Electric's policy introduced in April, 1947—to give transformer users the benefits of quantity production of *standard* products. At that time, transformer ratings below 15,000 volts were changed to conform to industry-wide preference as indicated in the E.E.I.-NEMA Fourth Report. *Now* this program has been extended to include the higher voltage ratings. *Now* the benefits of standardization—lower price levels, faster shipments and improved quality—are available to users of G-E Standard distribution transformers in *all* voltage classes.

FAMOUS SPIRAKORE QUALITY

In these new standard transformers, you still get the Spirakore features that have made General Electric distribution transformers the quality leaders of the industry. You get—

Sealed tank construction—that protects the insulating liquid from moisture and other contaminants in the surrounding air.

Attractive, weather-resisting, Glyptal finish—proved by years of outstanding service to be the most durable of protective finishes—recently improved.

Wound cores of corisil steel which make possible small, lightweight transformers.

Progressive-layer insulation and shielded winding—the combination that gives G-E distribution transformers their remarkable impulse strength.

In short, with these new standard ratings, you get the finest transformers we have ever built—the finest you can buy. *Apparatus Department, General Electric Co., Schenectady 5, New York.*

Spirakore Transformers

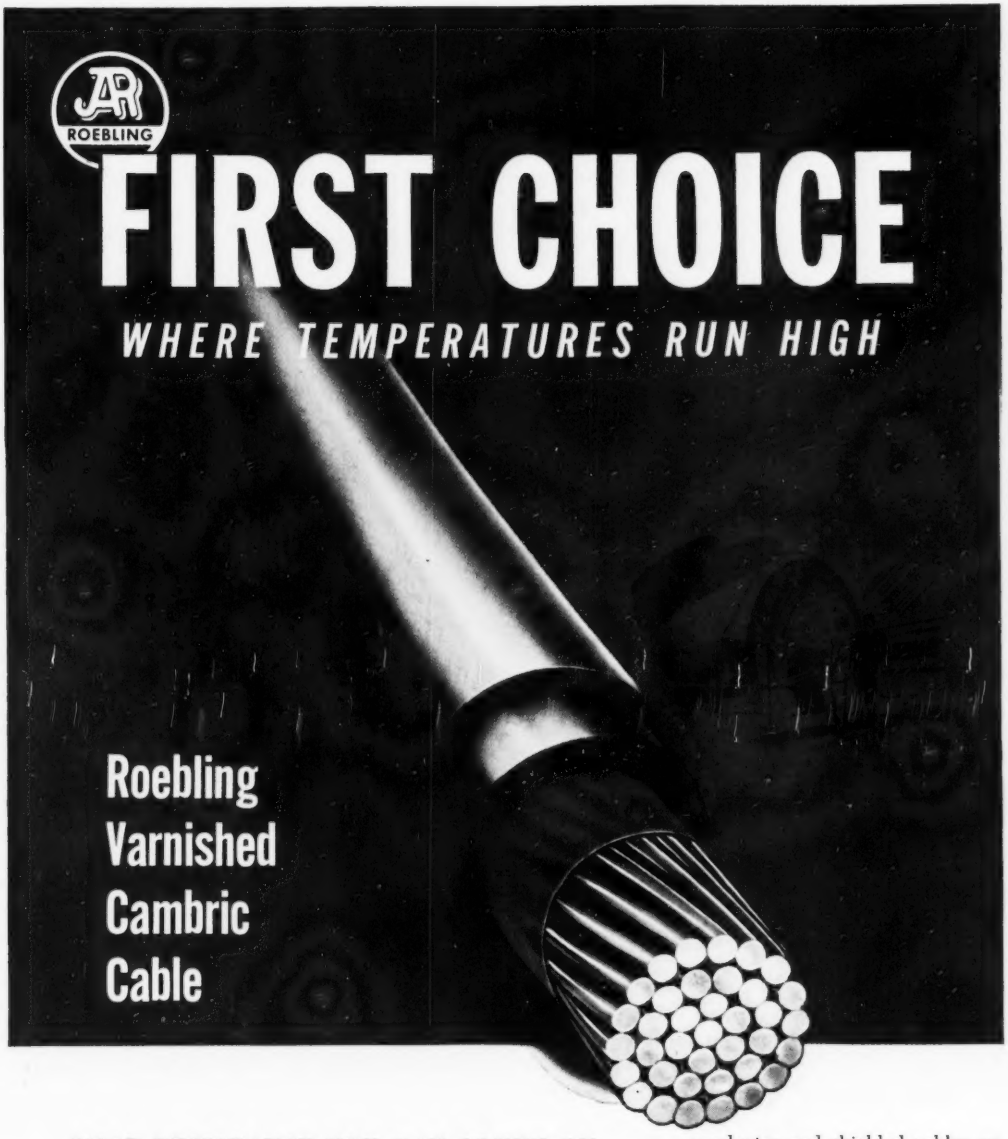
GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle and Richland, and Sales Offices in twenty Western cities.

JR ROEBLING

FIRST CHOICE

WHERE TEMPERATURES RUN HIGH



HEAT RESISTANCE YOU CAN COUNT ON

FOR TOPFLIGHT DEPENDABILITY where heat is a hazard, turn to Roebling Varnished Cambric Cable! You'll find it far superior to rubber-insulated cables for motor and generator leads and it is outstandingly adapted for transformer and oil switch leads.

Roebling Varnished Cambric Cable comes in single and multiple conductor types—single, from 2,000,000 C. M. to No. 14 A.W.G. Designed for use up to 17,000 volts between phases for unshielded multiple conductor . . . up to 21,000 volts between phases for single conductor and shielded cables on ungrounded neutral systems . . . up to 28,000 volts between phases for single conductor and shielded cables on grounded neutral systems.

Write us, or get in touch with your Roebling Distributor. John A. Roebling's Sons Company of California, San Francisco, Los Angeles, Seattle, Portland.

WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

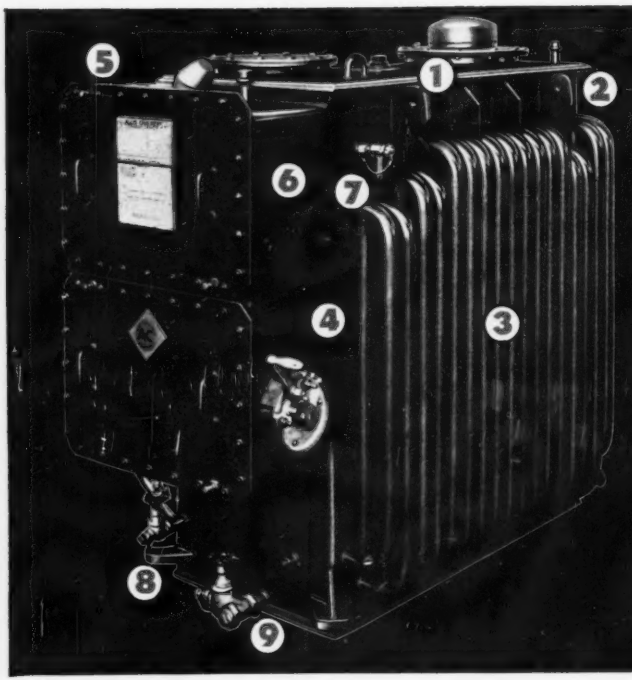
Atlanta, 934 Avon Ave. ★ *Boston*, 51 Sleeper St. ★ *Chicago*, 5525 W. Roosevelt Rd. ★ *Cleveland*, 701 St. Clair Ave., N. E. ★ *Denver*, 1635 17th St. ★ *Houston*, 6216 Navigation Blvd. ★ *Los Angeles*, 216 S. Alameda St. ★ *New York*, 19 Rector St. ★ *Philadelphia*, 12 S. 12th St. ★ *Pittsburgh*, 855 W. North Ave. ★ *Portland, Ore.*, 1032 N.W. 14th Ave. ★ *San Francisco*, 1740 17th St. ★ *Seattle*, 900 First Ave.

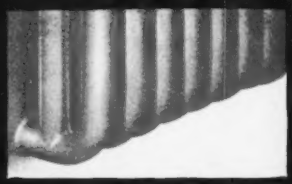
ROEBLING

☆ A CENTURY OF CONFIDENCE ☆

BEAT CORROSION! FLOODING! SUBMERSION!

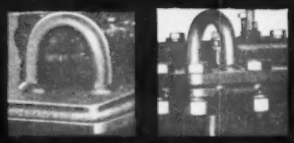
With Allis-Chalmers Network Transformers





Pressure-tested Seamless Tubes

Strong, Workable Bosses and Lugs



Sealed Cover, Welded or Bolted On

SERVING concentrated metropolitan loads, Network Transformers must operate dependably under the most adverse conditions.

These TANK CONSTRUCTION FEATURES show how Allis-Chalmers builds Network Transformers to combat corrosion, flooding, even complete submersion: —

1. Heavy tank cover (½" thick), welded or bolted on.
2. Guide angles on inside of tank wall provide positive positioning of core and coils.
3. Heavy gauge steel tank . . . seamless drawn radiating tubes. All nuts, bolts etc. galvanized.
4. Switch case and terminal chamber welded directly to main tank eliminates gasketed joint and reduces overall height.
5. Three coats of paint — each coat flow painted and baked on.
6. Seams and joints externally welded to eliminate crevices.
7. Tanks and cooling tubes are pressure tested far in excess of operating conditions.
8. Jack bosses free of obstructions for convenient lifting.
9. Design of base permits free rolling in any direction — provides for under-tank ventilation.

For the *complete* story of A-C Network Transformers — including circular core and coil design, no-load tap changer, accessories etc. — contact your nearby district office. Or write for fact-packed 24 page bulletin 61B6152A. A 2601

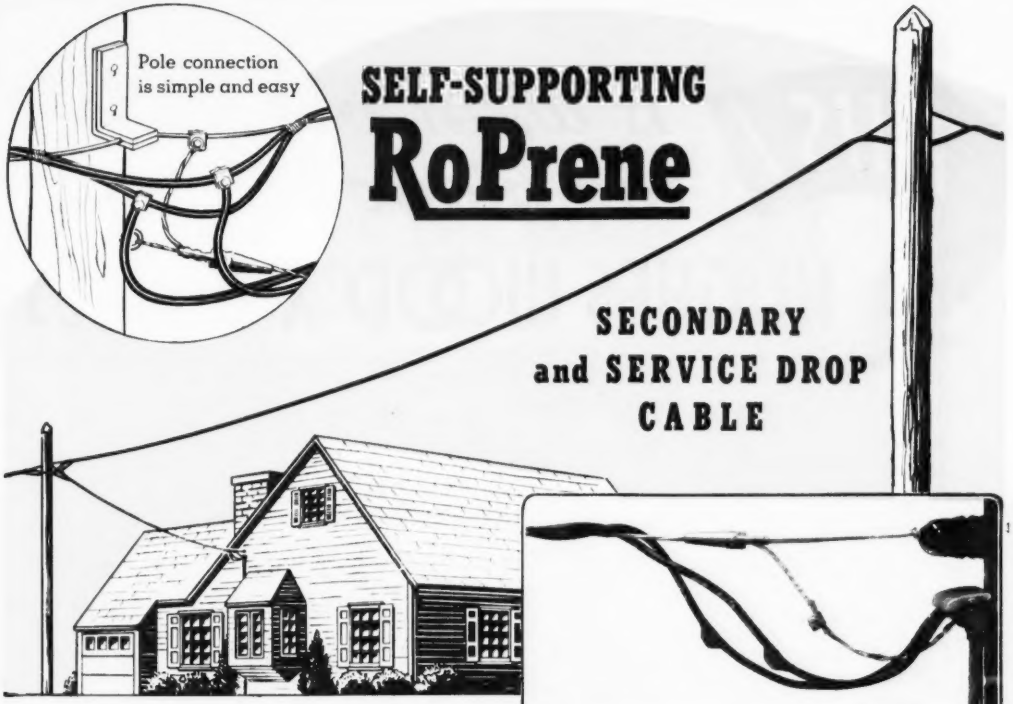
ALLIS-CHALMERS, 939A SO. 70 ST.
MILWAUKEE, WIS.

ALLIS-CHALMERS

Network Transformers—Nearly 1,000,000 KVA Installed

SELF-SUPPORTING RoPrene

SECONDARY and SERVICE DROP CABLE



Service drop connection to house simplified with fittings and hardware commercially available.

Photo courtesy Fargo Mfg. Co., Inc.

FOR ECONOMY IN AERIAL SERVICE.

As a new development of time-proven construction, RoPrene Secondary or Service Drop Cable consists of RoPrene (Neoprene) insulated power conductors, spiralled around a "straight-away" neutral conductor for mechanical support. Here is simplicity in construction, economy of installation, longer life under all weather conditions . . . plus the neater appearance of a single cable assembly compared to open wires.

These advantages can be yours:

Lower Cost
Ease and Economy of Installation
No Mechanical Stress on Power Conductors
No Coverings to Rot and Festoon
High Weather Resistance
Reduced Maintenance
Neat, Compact Appearance
Versatility

Write for more information and specification RS-4. See for yourself why, more and more, RoPrene Secondary and Service Drop Cable is becoming the accepted cable for overhead services. Available in a wide range of types and sizes.

FROM BAR TO FINISHED WIRE

ROME CABLE CORPORATION

ROME • NEW YORK

PACIFIC COAST SALES OFFICES

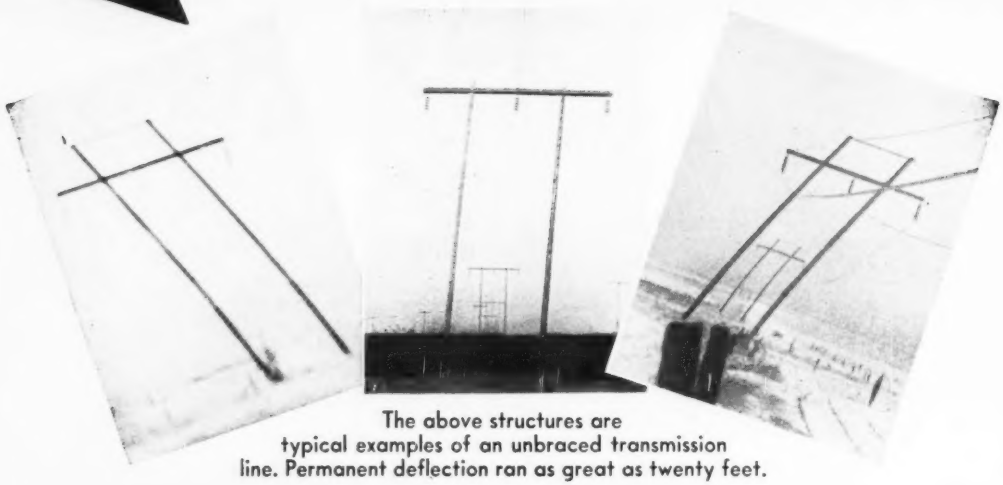
SALT LAKE CITY 1, UTAH
462 Union Pacific Annex Bldg.

LOS ANGELES 21, CALIF.
2038 Bay Street

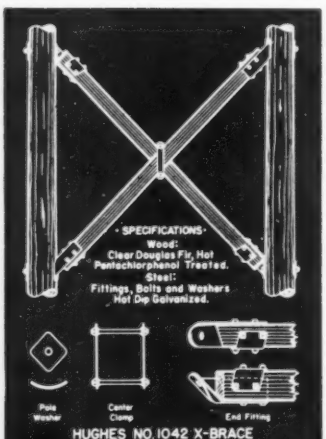
SAN FRANCISCO 3, CALIF.
1045 Bryant Street

SEATTLE 4, WASH.
3404 Fourth Ave., So.

THIS! *is what prompted the pioneering of* HUGHES WOOD X-BRACES



The above structures are typical examples of an unbraced transmission line. Permanent deflection ran as great as twenty feet.

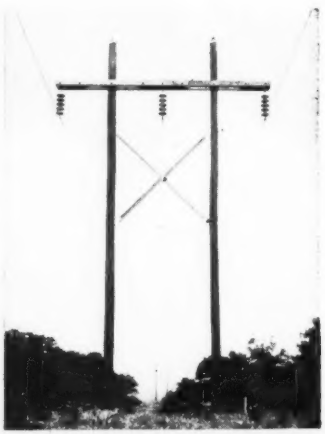


HUGHES NO. 1042 X-BRACE

The unbraced structures above and their excessive top deflections and ground line movements prompted the development of the Hughes X-Braces.

They have proved their worth not only in preventing the above conditions, but also in permitting longer, more economical spans.

For your particular bracing problem we invite your consultation with our Engineering Department.



HUGHES BROTHERS
SEWARD, NEBRASKA
FOUNDED · 1921 INCORPORATED

Be Sure They're "COPPERWELD"

for **25** YEARS, this name on **Ground Rods** has meant **PERMANENT GROUNDING PROTECTION**

Insist upon and get the protection afforded by the name "Copperweld"* on the ground rods you use. This famous name identifies the only ground rods made by the exclusive Molten-Welding process—in which a thick covering of protective copper is inseparably and continuously welded to a core of high strength alloy steel. The inseparable union of these two metals, which can be accomplished only by Molten-Welding, provides the combination of stiffness for easy driving—and permanent rust-resistance for long life.

When you use Copperweld non-rusting Ground Rods and Clamps, the possibilities of corrosion and high resistance connections are eliminated. Millions of Copperweld Ground Rods and Clamps, now in service, have proved their superiority by rendering permanent grounding protection.

*Trade Mark

THE ONLY GROUND ROD WITH A THICK COPPER COVERING INSEPARABLY MOLTEN-WELDED TO A STIFF ALLOY STEEL CORE IS STAMPED "COPPERWELD"

Chamfered End Prevents Mushrooming
Copper-to-Copper Contacts
Stiff Alloy Steel Core Makes Driving Easy
Plainly Marked Length and the Name "Copperweld" Aid Inspection After Rod Has Been Driven
Cross-Section Of Copperweld Ground Rod. The Thick, Protective Copper Covering Is Permanently Molten-Welded To Alloy Steel.

MADE BY

COPPERWELD STEEL COMPANY

GLASSPORT, PA.

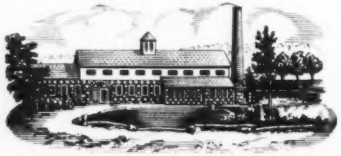
Pacific Coast Office: Monadnock Bldg., San Francisco

Copperweld TRADE MARK **GROUND RODS AND CLAMPS**

stocked and sold by { HUBBARD & COMPANY, National Sales Agents and all their distributors and JOSLYN MFG. & SUPPLY CO., National Distributors

Time

Time is the measure of all things. Few of man's inventions can stand its merciless judgment. Yet Kerite for over 90 years has thrived and spread and gained renown. Time, indeed, gives Kerite its unqualified recommendation.



THE KERITE COMPANY

NEW YORK CHICAGO SAN FRANCISCO LOS ANGELES

Kerite Insulation—Your Cable's Best Life Insurance

LVD Flex-a-power

STOP, LOOK AND READ HOW EASILY

CUTS INSTALLATION COST

KEEPS MAINTENANCE LOW

GIVES MAXIMUM BUSWAY FLEXIBILITY

Because Trumbull LVD FLEX-A-POWER® is made in pre-fabricated units, you save money with this system these three ways.

The units are easily and quickly put together . . . no special engineering skill is required for installation. This means that many expensive time and labor costs are eliminated for a *lower "installed cost."*

Not only is LVD pre-fabricated, but it is pre-engineered so that you can predetermine electrical performance before actual installation. This advantage is an important factor in minimizing voltage drop and in keeping machine efficiency high.

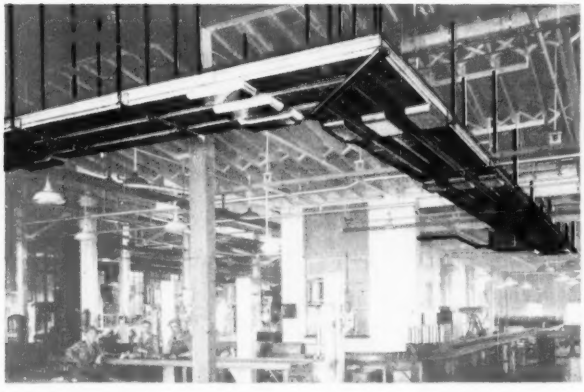
LONG-LIVED MATERIALS —

Another advantage — LVD FLEX-A-POWER materials do not deteriorate even under the most severe operating conditions, thus assuring years of satisfactory service *without costly maintenance repairs.*

ADAPTABLE, "TAKE-APARTABLE" —

LVD FLEX-A-POWER is readily adaptable to any power distribution problem you may have. Fast to install, its convenient "take-apart-ability" allows you to relocate your LVD system without replacing a single part!

Learn more about the many advantages of LVD. Write for Circular TEC 152 today. THE TRUMBULL ELECTRIC MANUFACTURING COMPANY, Plainville, Conn.

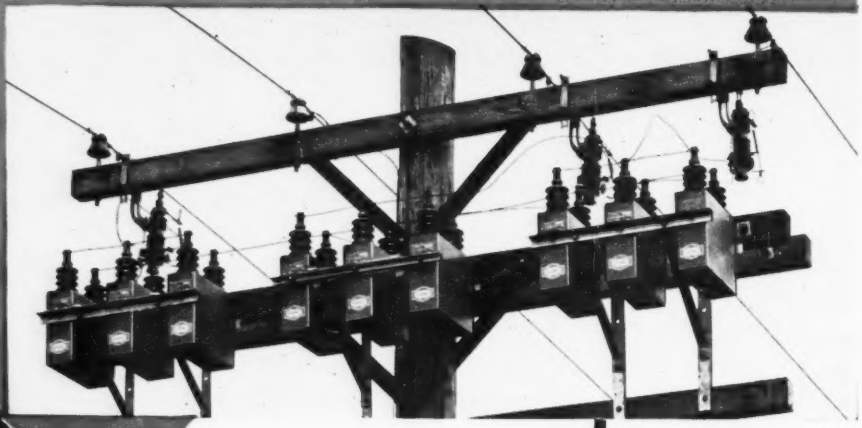


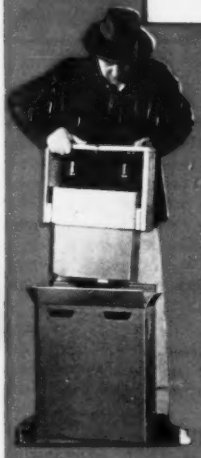
Men Who Observe the Best Electrical Practice Make It a Practice to Use

TRUMBULL (T) ELECTRIC

TRUMBULL'S TRAINLOAD OF NEW PRODUCTS

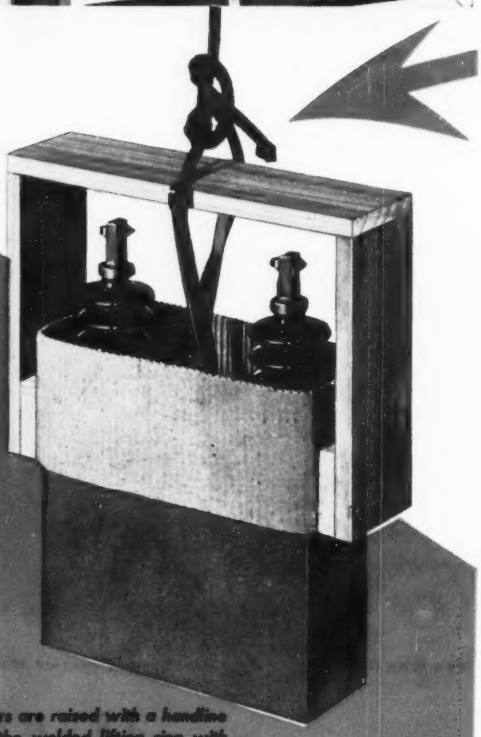
New KEARNEY





In or out of the carton, capacitor bushings are protected against damage. The entire weight of the capacitor is carried by the wood framing.

Hand-holds in the carton are a practical convenience for storekeepers or linemen in handling capacitors.



Capacitors are raised with a handline through the welded lifting ring with the wood framing intact to protect the capacitor against accidental damage.

Shunt Capacitors

For Power Factor Correction

Built by Engineers with Over 15 Years of Capacitor Experience,

Give You These Advantages:

1. **Fit all standard mounting racks**
2. **Extra heavy wet process porcelain bushing**
3. **Welded sheet steel case with hot zinc spray and enamel coating provides double protection to reduce maintenance cost, and—**

4 Exclusive Kearney protective packaging feature

This important feature assures complete protection from the moment of packing until the capacitor is installed in factory-perfect condition on the pole.

Loss of capacitor vacuum through misuse or damage to the bushings by improper handling, is the greatest single factor in causing faulty operation. That's why the Kearney protective wood bar is attached firmly to the capacitor and is of sufficient width and strength to protect the capacitor from the hazards of shipping and installing. The corrugated shipping container, with convenient hand holds, permits easy handling of the capacitor with absolutely no strain on the bushings.

In the field the capacitor is lifted from the container by the wood bar handle, then a hand line is attached to the built-in metal lifting ring and the capacitor is lifted into the hanger with the *wood bar protective handle intact*. The removal of the single band from the lifting ring permits easy removal of the wood bar, and the capacitor is safely installed.

Write for bulletin 21-1 for complete information about this improved Shunt Capacitor.

BETTER CONSTRUCTION—SAFER MAINTENANCE

Always Specify KEARNEY PRODUCTS *for the Job*

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

4224-42 CLAYTON AVE. – ST. LOUIS 10, MISSOURI

Canadian Plant, Guelph, Ontario

West Coast Distributor: **MAYDWELL and HARTZELL, INC.**

130

WHY WESTERN UTILITIES PREFER AMERICAN B-4 CREW-COMPARTMENT BODIES

This photo of an American B-4 Body, courtesy Portland General Electric Company, long-time user of American bodies and accessories.

B-4 carries 7 men comfortably and safely with plenty of room for equipment and supplies . . . low center of gravity and weight-saving construction make it excellent off-road performer.

American Collapsible Power Reel (CR No. 5188) for stringing and recovering wire is designed to operate from end of extended winch shaft on side of body.

American Universal Swivel Sheave (No. 4018) mounts at rear of body; works at any angle; tension type roller keeps line in proper position at all times.

The American B-4 Line Construction Body is especially well adapted to abuse a line truck takes in constructing and maintaining lines through mountains and deserts. Formed from high-grade cold rolled steel without weight-adding structural or extruded members, it absorbs the racking and twisting of off-road work; does not overburden truck engine.

Body floor is steel safety tread and is 4" to 6" lower than in most trucks, so loading and unloading is easier and safer. Low center of gravity gives greater stability in traveling over rough ground.

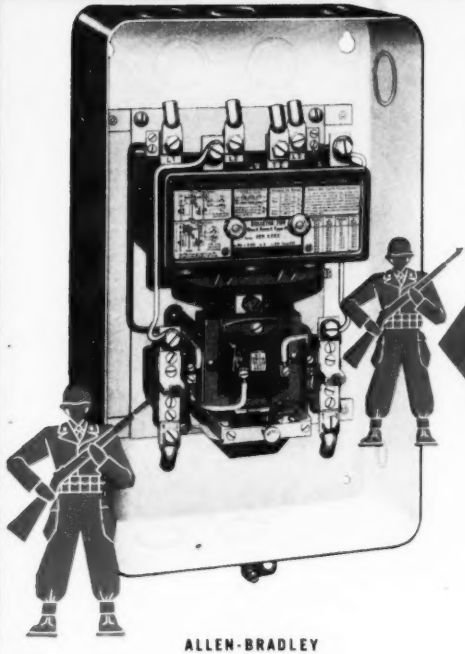
Crew Compartment rides 4 men comfortably, summer or winter. (Three others ride in cab.) Windows on all 4 sides give visibility and ventilation; seat tilts giving driver unobstructed rear view for winch operation.

WEST COAST FACTORY AND SERVICE

Our centrally located factory in Oakland assures you quick delivery and service by factory-trained specialists. We can engineer and build bodies for your special needs, often at or near stock model prices. Wire, write or phone your requirements NOW. No obligation.

THE *American* COACH and BODY COMPANY
CALIFORNIA DIVISION
432 Fifth St., Oakland 7, California

Sales Offices and Distributors Conveniently Located Thruout the West. General Offices and Factory: Cleveland, Ohio



HOW NICHROME* "SENTRIES" IN ALLEN-BRADLEY STARTERS PROTECT ELECTRIC MOTORS

Enemy ***number one*** of electric motors is overload—excessive current that causes motor windings to overheat, burn out. Here is an enemy of ***all*** motors, small or large, ready to go into action immediately a motor starts. Devices for protecting electric motors against overload, therefore, must be exceptionally dependable . . . must not fail to disconnect the motor from the line before a dangerous temperature is reached.

FOR PRECISION-PROTECTION, ALLEN-BRADLEY OVERLOAD RELAYS EMPLOY NICHROME

In controls of this type, the current that flows through the motor windings is used to heat Nichrome thermal elements in the overload relays. Thus heating of the relay element monitors the heating of the motor windings. When a dangerous motor temperature is reached, the heat from the Nichrome unit releases a contact arm in the relay, thereby disconnecting the motor from the line. Given a few seconds to cool, the relay mechanism can be reset by pressing a button—completing the motor circuit again.

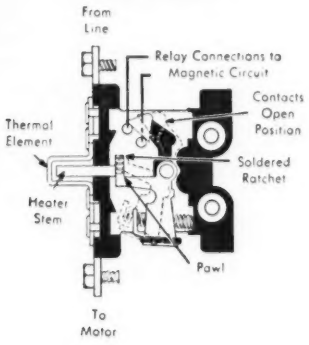
STABILITY OF NICHROME ASSURES DEPENDABLE RELAY PERFORMANCE

Because of its uniform quality, superb corrosion-resistance, and retention of physical and electrical properties at high temperatures, Nichrome is unsurpassed for the accurate job the all-important thermal unit must perform in these Allen-Bradley controls.

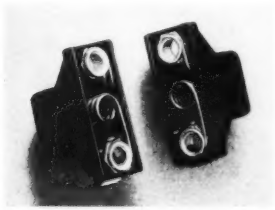
D-H ALLOYS AND YOUR REQUIREMENTS

If your products demand electrical resistance material of outstanding uniformity, high stability and long life, remember this application. Be guided by the example of Allen-Bradley and have Driver-Harris supply your needs. We fabricate the most complete line of electrical resistance alloys in the world, and will gladly make recommendations based upon your specific requirements.

ALLEN-BRADLEY RESISTO-THERM RELAY OPERATION



The heater stem is almost completely surrounded by a Nichrome thermal unit. A ratchet wheel is soldered to one end of the heater stem, and this engages a pawl which holds the relay contacts closed against spring tension. Sustained overload on the motor heats the Nichrome element which, in turn, heats the stem. Heat from the stem melts the solder, which frees the ratchet wheel. The wheel turns and releases the pawl, thereby opening the relay contacts.



TYPE N17 Thermal Unit— wound with Nichrome No. 16 B&S gauge bare wire. 3.01 amps.

TYPE N41 Thermal Unit— Nichrome No. 19 B&S gauge strip, 9/16-inch wide. 34.8 amps.

50TH YEAR SPECIAL PURPOSE ALLOYS SINCE 1899 D/H TRADE MARK REG. U.S. PAT. OFF. 1899 - 1949

Nichrome is manufactured only by

Driver-Harris Company

HARRISON, NEW JERSEY

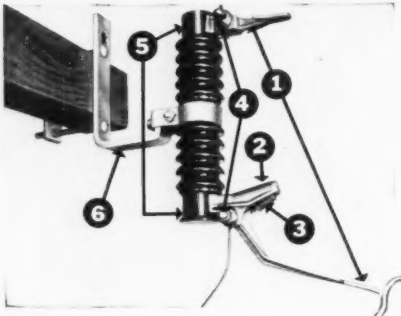
BRANCHES: Chicago, Detroit, Cleveland, Los Angeles, San Francisco, Seattle

Manufactured and sold in Canada by
The B. GREENING WIRE COMPANY, LTD., Hamilton, Ontario, Canada

*T.M. Reg.U.S.Pat.Off.

For Service Continuity...

CHANCE *Open Link* Cutout



7.5 KV-15 KV
50 AMPS.

C492

1. The Chance Type EM Open Link Cutout is built to take rough handling and hard usage—to function smoothly, even after hundreds of repeated operations. *Sturdy Bronze Fittings* are used throughout.

2. *Protective Housing* covers the terminal separation spring to prevent ice and sleet from interfering with operation of spring.

3. *Terminal Spring* keeps fuse link under sufficient tension to insure proper contact and to separate terminals quickly when the link blows. It also absorbs the shock of overtravel, thus protecting the insulator. The spring is so located that tension cannot be overstressed in handling the cutout. It is also out of the current carrying path and the tension will not be affected by heavy current surges.

Safety Fuse Applicator

For extra protection when re-fusing all open link cutouts, Chance can furnish a fuse applicator with a transparent plastic shield that protects the operator in case the circuit is still shorted and the fuse blows.

4. *Pressure Type Conductor Terminals* are shaped to make four point line contact with any size jumper used. Nuts are secured with lock washers.

5. *Resilient Mounted Bronze Fittings* protect the porcelain insulators and reduce radio interference. The mounting bracket is cushioned by a soft metal band.

6. *Adjustable Mounting Bracket* will fit any size arm or may be attached to poles.

ABC INDUSTRIES

You know it's RIGHT

A. B. CHANCE COMPANY—CENTRALIA, MO.

. . . and System Protection

CHANCE Drop Out Fuse Cutout

7.5 KV-15 KV
100 AMPS.

A Glance Tells the Story

OPERATED MANUALLY

BLOWN BY FAULT

The Chance Type KM Open Dropout Fuse Cutout gives you two outstanding advantages—plus many other features that contribute to more dependable service from electrical distribution systems.

POSITIVE INDICATION . . . A glance shows whether the cutout has been opened as a disconnect or blown. If the fuse tube is hanging from the lower contact housing, it has been opened manually. If the fuse tube is hanging from the upper housing of the cutout, the fuse link has been blown. *Only Chance Dropout Cutouts have this distinctive feature.*

DEPENDABLE OPERATION IN ALL KINDS OF WEATHER. All working parts, at both top and bottom of the cutout assembly, are shielded from ice accumulations. When the fuse link blows, the lower end of the fuse tube swings away from the lower contact, leaving the fuse tube suspended by its closed end. This prevents moisture from entering the fuse tube.

OTHER IMPORTANT FEATURES. When the fuse tube is moved into the closed position, fuse link is not subjected to shock or additional tension causing premature failure. Fuse tube is not subjected to compression stresses or warping when in the closed position.

Pressure contact springs are protected by over-travel stops and wipe contacts clean when fuse tube is installed.

When the fuse link melts, the fuse link leader is quickly drawn out of the tube by an ejector arm which does not lose contact with the clip until it has completed its operation. This operation is delayed during short circuit, reducing the possibility of contact pitting.

Fuse tube may be provided with an attachment which will prevent the fuse leader being thrown from the cutout during a short circuit operation.

when you specify...

SAN FRANCISCO, CALIFORNIA

ARE ASSEMBLY COSTS TOO HIGH?

ONE WAY you can save is by reducing the lost time and motion due to inferior tubing. Dieflex Varnished Tubings and Saturated Sleevings have the flexibility, smooth bore, and push-back qualities that keep assembly workers' fingers flying. And there is no fraying—of tubing or nerves.

Uniform, complete impregnation assures high dielectric strength. The base may be either finely braided cotton or glass fiber, and impregnation may be oleoresinous varnish or silicones—depending on the requirements of your products.

Would you like to try Dieflex in your assembly and prove to your own satisfaction how much difference it makes? We will gladly arrange to supply the quantities you need for a practical test.

DIEFLEX
VARNISHED TUBING PRODUCTS

DIEFLEX PRODUCTS LIST

MADE WITH BRAIDED COTTON SLEEVING BASE

Grade A-1 Magneto Grade Varnished Tubings
Grade B-1 Standard Grade Varnished Tubings
Grades C-1 and C-2 Heavily Coated Saturated Sleevings
Grade C-3 Lightly Coated Saturated Sleevings
Heavy Wall Varnished Tubings and Saturated Sleevings

MADE WITH BRAIDED GLASS SLEEVING BASE

Grade A-1 Magneto Grade Varnished Glass Tubings
Grade C-1 Extra Heavily Saturated Glass Sleevings
Grade C-2 Heavily Saturated Glass Sleevings
Grade C-3 Lightly Saturated Glass Sleevings
Silicone-Treated Glass Varnished Tubings and Sleevings

TRI-STATE SUPPLY CORPORATIONS

LOS ANGELES 13	SAN FRANCISCO 7	SEATTLE 4
544 S. San Pedro St.	554 Bryant St.	318 Occidental Ave.
MUtual 2354	EXbrook 2-8890	MAin 4161

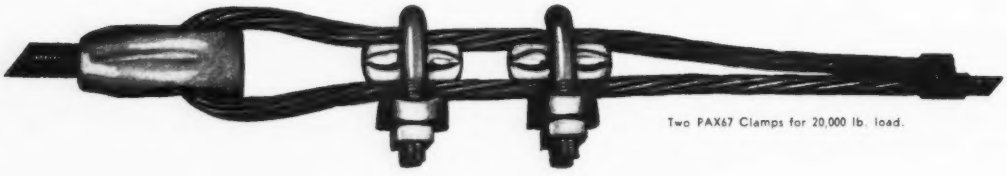
The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr.: N. SLATER CO., LTD., HAMILTON, ONTARIO, CANADA

Export Distributor: INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

FIELD TESTED M|F GUY CLAMPS



Two PAX67 Clamps for 20,000 lb. load.

. . . GREATER HOLDING POWER . . LOWER COSTS . . Over 1,200,000 Now In Use!

Patented U. S. and Canada

Write for descriptive data. We will be glad to furnish free samples for test purposes together with our recommendations on receipt of data relative to type, strength and diameters of strands to be tested.

Load Ratings are confirmed by numerous third party tests.

WEST COAST REPRESENTATIVES

INDUSTRIAL ENGINEERING & EQUIPMENT CORP.
708 Subway Terminal Building
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WALTHAM, DE WITT & KRUSI
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WILLIAM J. COTTRELL CO.
309 SW Third Avenue
Portland 4, Oregon

Because of the efficient, self-tightening, patented, tilting U-bolt feature, M.I.F. Guy Clamps provide far more holding power for less cost. In addition, M.I.F. Guy Clamps develop, on the average, over 100% of the rated breaking strength of the strands for which recommended. (See specifications below.)

The M.I.F. PAX64 Clamp, rated at 5,000 lbs., weighs only 0.57 lbs.; the PAX67 Clamp, rated at 10,000 lbs., weighs only 1.26 lbs. Prices, in quantity, are approximately 26c and 34c, respectively. We invite your comparison.

Each M.I.F. Guy Clamp *accommodates a range of strand sizes.* This, combined with low weight per unit, effects important savings in handling and inventory.

Installation is simple. It is seldom necessary to disassemble the clamps to effect installation. No special tools are needed, and all nuts can be readily tightened to recommended torque with a 10" Crescent wrench or equivalent. Clamps can be furnished fitted with hex instead of square nuts at only a slight additional cost.

For use under extremely corrosive conditions or with stainless steel strand, we are preparing to offer our clamps *fitted with stainless steel U-bolts and nuts.* Test data now available.

SPECIFICATIONS

Cat. No.	Rating	Strand Diameter Range	Recommended Torque on Nuts		Size of U-bolt	Weight Per C
			Carbon Steel	Stainless Steel		
PAX64	5,000 lbs.	3 16"-3 8"	35-40 ft. lbs.	40- 50 ft. lbs.	3 8"	57 lbs.
PAX67	10,000 lbs.	"1 4"-1 2"	75-85 ft. lbs.	90-110 ft. lbs.	1 2"	126 lbs.
PAX69	20,000 lbs.	5 16"-1 2"	75-85 ft. lbs.	90-110 ft. lbs.	1 2"	245 lbs.

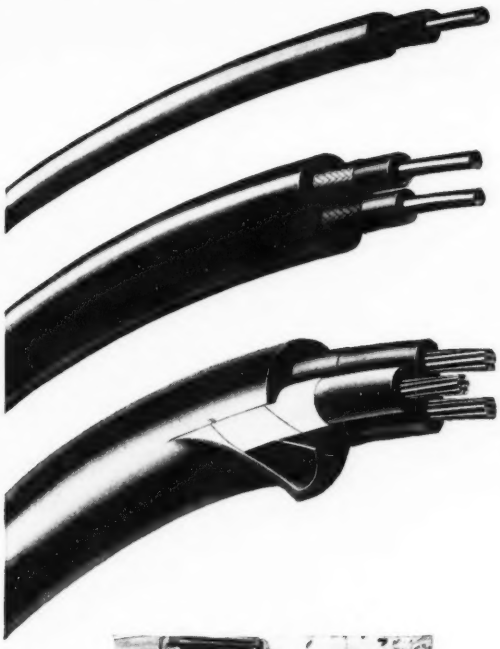
With 3-wire strands range is 5 16" to 1 2".

MALLABLE IRON FITTINGS CO.

POLE HARDWARE DEPT.

BRANFORD, CONN.

Canadian Mfrs. and Distributors: Line and Cable Accessories, Ltd., Toronto



Choose One Type of Power Cable... Use it Three Ways

Pick Durasheath for power distribution: small size or large . . . one, two or three conductors . . . to carry from 0 to 5,000 volts. Then use this type in any installation you like: buried directly in the ground . . . in conduit . . . suspended from poles . . . or in a run that includes all three. Following are some of the characteristics of Durasheath that give it this versatility:

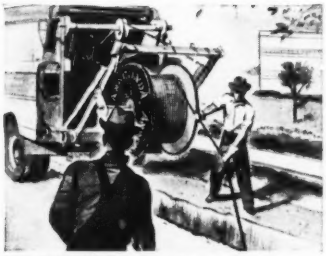
Durasheath is *unaffected by electrolysis*, corrosion and extremes in temperature.

High resistance to oil, flame, abrasion, cutting, impact and the moisture, acids and alkalies found in the soil.

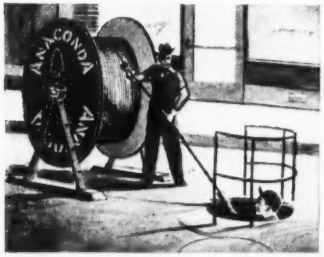
Light weight—greater strength.

More flexible, easier to handle.

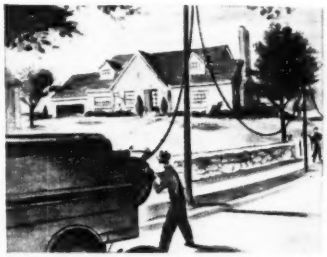
For power distribution between industrial plants, in street lighting systems, airports, mines, railroad signal systems, farm buildings and real estate developments—to mention a few—use Durasheath, the all-purpose cable. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 49-121



UNDERGROUND. Toughness of neoprene jacket assures long life of Durasheath when installed directly in the ground.



IN DUCT. Moisture, oil, acid resistance of neoprene jacket make Durasheath an ideal cable for this application.



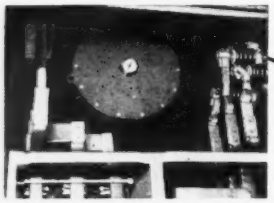
IN THE AIR. In single or multi conductors, Durasheath truly is a one-type cable for all-type use.

Anaconda **Durasheath**

ANACONDA

THE ALL-PURPOSE CABLE

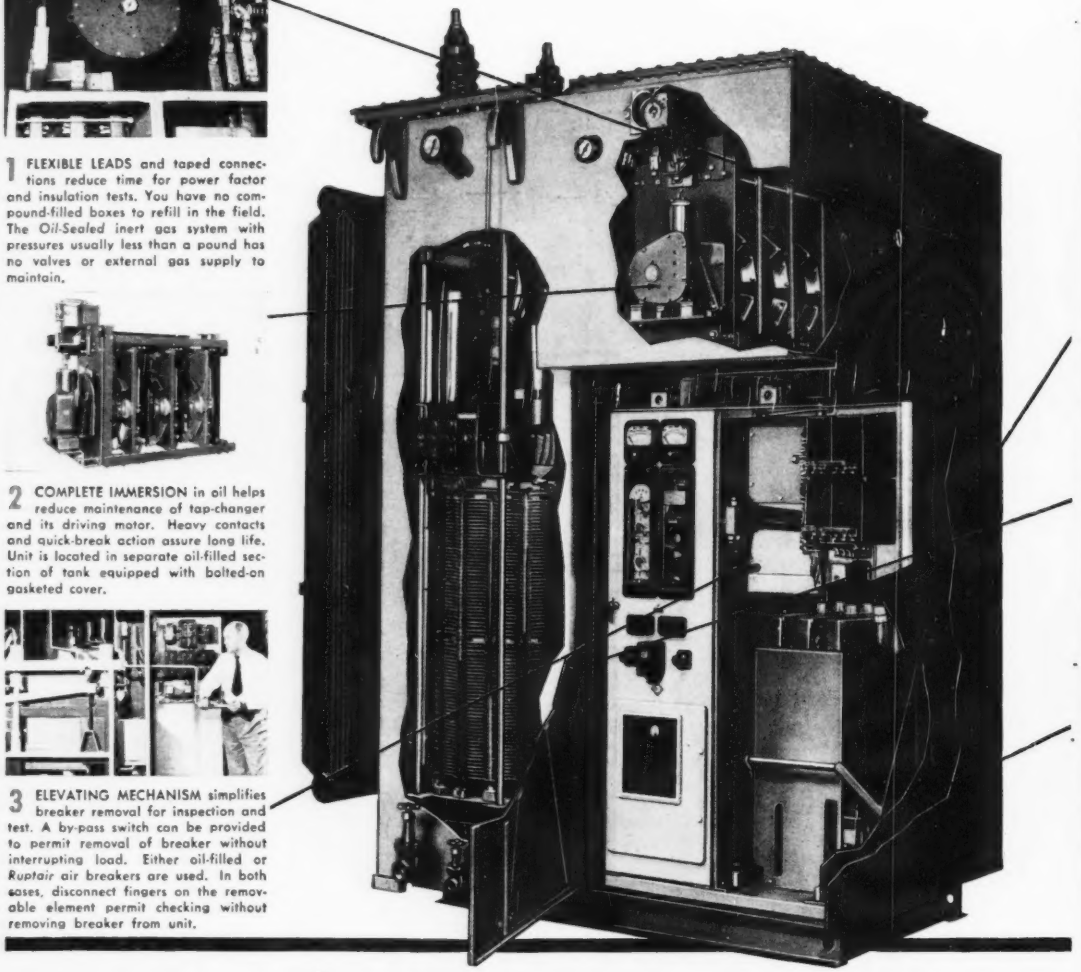
Six Points For

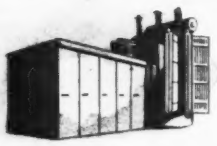


1 **FLEXIBLE LEADS** and taped connections reduce time for power factor and insulation tests. You have no compound-filled boxes to refill in the field. The *Oil-Sealed* inert gas system with pressures usually less than a pound has no valves or external gas supply to maintain.

2 **COMPLETE IMMERSION** in oil helps reduce maintenance of tap-changer and its driving motor. Heavy contacts and quick-break action assure long life. Unit is located in separate oil-filled section of tank equipped with bolted-on gasketed cover.

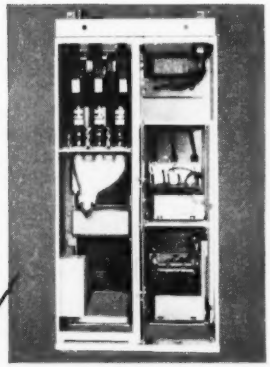
3 **ELEVATING MECHANISM** simplifies breaker removal for inspection and test. A by-pass switch can be provided to permit removal of breaker without interrupting load. Either oil-filled or *Ruptair* air breakers are used. In both cases, disconnect fingers on the removable element permit checking without removing breaker from unit.





ALLIS-CHALMERS MCS MULTI-CIRCUIT unit substations consist of two or more vertical lift metal-clad switchgear units throat-connected to 1 or 2 transformers. They have the *Oil-sealed* inert gas system for protecting oil and the 32 5/8% step regulator mechanism for ± 10% Range of Regulation. **Bulletin 11B6935.**

Fast Inspection...

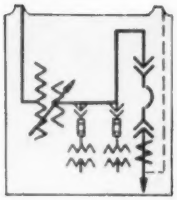


4 DRAWOUT MOUNTED potential and control power transformers permit removal without interrupting service. Smaller door speeds fuse replacement. Current transformers are also accessible from rear. Potheads or bushings or both can be supplied for secondary terminations.

5 DOORS front and rear permit easy access to switchgear, bus connections, *Feather-Touch* control for the tap-changer, potential and current transformers, and other control equipment. These doors are equipped with a labyrinth-type seal to prevent leakage around edges.

6 COMPLETE SWITCHGEAR UNIT can be removed for access to its compartment. This speeds and simplifies painting of compartment interior when required.

ALLIS-CHALMERS SCS SINGLE CIRCUIT UNIT SUBSTATIONS!



EASILY ACCESSIBLE for inspection, maintenance and routine tests, Allis-Chalmers SCS Unit Substations for single feeder applications build customer good-will. Shutdowns are short and infrequent . . . see left how inspections and tests are speeded up.

The weatherproof, modern housing contains all equipment necessary — transformer with ±10% Load Ratio Control . . . the *Oil-Sealed* inert gas system . . . secondary breaker . . . current, potential and control transformers . . . and meters and relays as needed. Installation is simple; a single concrete pad prepared from advance drawings is the only foundation requirement.

HAS 32 5/8 % STEP REGULATOR UNIT

±10% range of regulation is provided by the mechanism that now regulates over 5,000,000 kva in Allis-Chalmers Step Regulators. This range handles more load and holds voltage to a narrower band than ±7½% LRC. As the standard range, it means your cost is less because the savings in manufacturing costs are passed along to you. Call your nearby A-C office for details or write direct. ALLIS-CHALMERS, 939A SO. 70 ST. MILWAUKEE, WIS.

Feather-Touch, *Oil-Sealed*, and *Ruptair* are Allis-Chalmers trademarks

A 2530

ALLIS-CHALMERS

Pioneers in Load Ratio Control — Originators of 5/8% Step Regulation

TOP LINES
for all lines

. . . are available from Graybar

For distribution or transmission lines — construction or maintenance — Graybar has all the *supply* lines you need. You can count on every item, because Graybar's standards of selection are tough! Everything Graybar distributes is a product of a leading manufacturer. Its efficiency and reliability have been tested, proved, and improved through years of research and field service.

POLES AND CROSSARMS

Graybar-selected poles — full-length pressure-treated pine and fir; and full-length pressure-treated, butt-incised cedar. Rainier fir crossarms that have the proven strength and durability to resist taxing combinations of heavy conductor load and shock from snow, ice, and wind.

Wire, strand, hardware

Crapo strand and high-strength static wire to fit your specifications . . . Hubbard braces, brackets, and racks for long-lasting pole structures . . . Chance pole anchors for guying of all types . . . Reliable connectors for quick, secure tap-offs . . . rugged O-B insulators . . . and everything else the project requires!

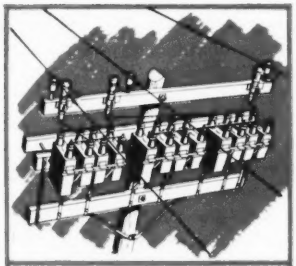
ALL THE TOOLS, TOO!

Help your linemen do each job quickly, efficiently, and safely — supply them with all the proper tools. Graybar has everything from pliers and rubber gloves to FWD line trucks. To round out our complete service, there is a Graybar Outside Construction Specialist to consult with you on any special problem "from the bottom of the hole to the top of the pole." *Graybar Electric Company, Inc. Executive Offices: Graybar Building, New York 17, New York.* 4961

You get the best of everything electrical
Via GraybaR

SERVING THE ELECTRICAL WEST

...for Topnotch Performance!



Capacitors provide the quickest and most economical means of relieving system overloads and improving voltage conditions where low power factor loads prevail. Capacitors may be obtained from stock, and installed costs are low...less than $10 per Kvar.

Moloney Capacitors are built to the highest standards of quality to assure the excellence of performance that is expected of any product bearing the name Moloney. Reliability of performance is insured by high factor of safety in design, expert workmanship, careful processing and thorough testing.

Individual capacitor sections are wound of aluminum foil and pure kraft insulating papers. Winding is done under controlled temperature and humidity conditions to assure uniformly wound, wrinkle-free sections.

Sections are individually tested prior to assembly into complete capacitor packs. Multi-layer major insulation is placed in the case, and then the assembled pack is inserted. Sections are then connected in parallel groups and groups are connected in series, with a discharge resistor across each group. The cover, with the bushings already installed, is then welded into place completing the case.

The capacitor is now ready for drying and filling with Askarel. Moisture and air are removed by thermo-vacuum treatment, following which non-inflammable Askarel is used to impregnate the capacitor pack and to completely fill the case. Next the filler openings are sealed off and the capacitor is pressure tested for leaks. The capacitor is then given its final electrical tests and packed for shipment.

ME49-9

MOLONEY ELECTRIC COMPANY

Sales offices in all principal cities

FACTORIES AT ST. LOUIS 20, MO., AND TORONTO, ONTARIO, CANADA

SIMPLEX-ANHYDREX CABLES STAY ON THE JOB IN WET LOCATIONS

HERE'S PROOF

IN TEST FIGURES

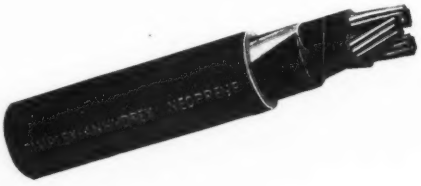
Continuous testing to rigid standards proves without doubt that Anhydrex insulation will not absorb more than 20 mg. of water per square inch of exposed surface. Rarely does the figure climb that high. After one day's immersion in water at 70° C. (158° F.) Anhydrex has a dielectric constant that will not exceed 3.2. Its increase in capacitance between one and eight days' immersion at 70° C. will not exceed 3.5% for insulation thicknesses greater than 4/64", or 5% for thicknesses of 4/64" and less.

IN SERVICE RECORDS

Reports from the field, which indicate that no ANYDREX Cable has ever failed due to water absorption, include this account: An eastern city known for its bad water conditions installed nearly 10,000 ft. of ANHYDREX Cable in its municipal signal and communications systems. During ten years' service the cables had no trouble whatsoever, although ducts and manholes there are nearly always full of water and metallic cables used in the same installations had proved inadequate. ANHYDREX Cable that was buried directly in the ground came through with the same trouble-free service, and portions of cables exposed above earth suffered no deterioration.

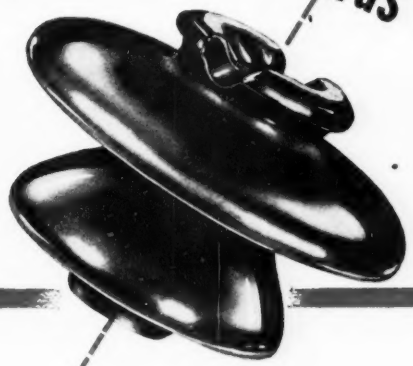
Neoprene-jacketed ANHYDREX Cables need no additional coverings. They cut down weight, diameter and cost. You can use them underground, overhead, or in ducts without fear of water and moisture, soil acids and alkalies, heat and weathering. Specify them with confidence for transmission and distribution systems, signal and communication circuits, street, airport and park lighting.

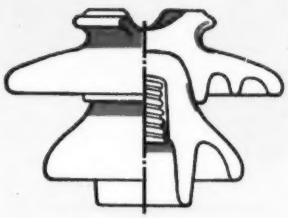
SIMPLEX-ANHYDREX

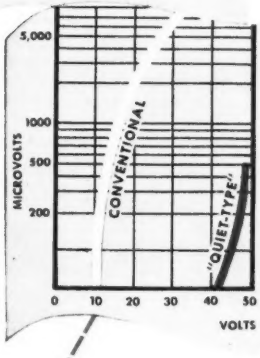


SIMPLEX WIRE & CABLE CO., 79 SIDNEY ST., CAMBRIDGE 39, MASS.

THOMAS "QUIET-TYPE" INSULATORS set tomorrow's standards







*Patent No. 2154387

● Typical Thomas advancement, is our complete line of *patented "Quiet-Type" Insulators. Record acceptance by the industry, proves these radio noise-free pin types are setting tomorrow's standards. It's not surprising . . . for they eliminate all insulator radio-interference.

Thomas engineers pioneered and were first to develop the under-glaze metallic oxide coating—applied to the areas indicated by red in the center sketch. The result is a barely discernible coating—contamination free because it's *under the glaze.* Sprayed on before firing (top sketch) it becomes a permanent part of the porcelain—can't come off and guarantees positive noise-free operation without sacrificing any insulating qualities.

Line and laboratory tests prove the superiority of these insulators over conventional types. As you see on the bottom graph, it takes four times as much voltage to produce noise-making microvolts with the Thomas "Quiet-Type" design.

In terms of customer goodwill your Thomas "Q-T" Insulators earn their slight additional cost many times over.

Write for free illustrated brochure describing these modern "Q-T" Insulators.

1873 THOMAS INSULATORS our 76th year RELIABILITY 1949

The R. Thomas and Sons Co.

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FOR HOMES OF TOMORROW

The switch is to

GENERAL

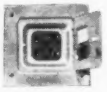
HOMES of tomorrow demand the best of today! That's why more and more electrical contractors—builders—architects—and wholesalers are switching to GENERAL!

GENERAL SWITCH CORP. specializes in the construction of Safety Switches, Service Entrance Equipment, Branch-Circuit or Residence Panels, Panelboards for Light and Power Distribution . . . for luxury type and low-cost housing projects. Safety Switches available from 30 through 1200 AMP.—250 V. and 600 V.—Type A, C and D—indoor and outdoor—horsepower rated.

Wherever quality—safety—convenience—endurance—trouble-free performance—ease of installation—and low maintenance costs are the first consideration, *the switch is to* GENERAL!

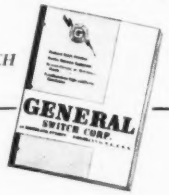
GENERAL MAIN AND RANGE COMBINATION. (Cat. No. 6214, surface or flush.) The most economical switch for range installations. Double pullout switch with one 60 AMP main and one 60 AMP range switch in series (also parallel). 4 lighting circuits (6 and 8 also available). Has 60 AMP sub-feed pressure wire connectors for water heater or other 220 V. circuits.

GENERAL EXTERNALLY OPERATED SAFETY SWITCH. (Cat. No. 1003N.) 100 AMP., 3 pole, 2 fuse switch with solid neutral. Knife blade construction. Plastic composition base. Quick-Break. Ample space for wiring.



GENERAL PLUG FUSE BRANCH-CIRCUIT or RESIDENCE PANEL. (Cat. No. 104, surface or flush.) Available up to 32 circuits. Flush spring catch.

Ask your wholesaler or write today for the GENERAL SWITCH 68-page catalog.



Distributed through wholesalers

GENERAL SWITCH CORP.

49 ROEBLING STREET, BROOKLYN 11, N. Y. • *Sales Offices in every major city*

NOW...A POLE DERRICK WITH 45% LESS WEIGHT!

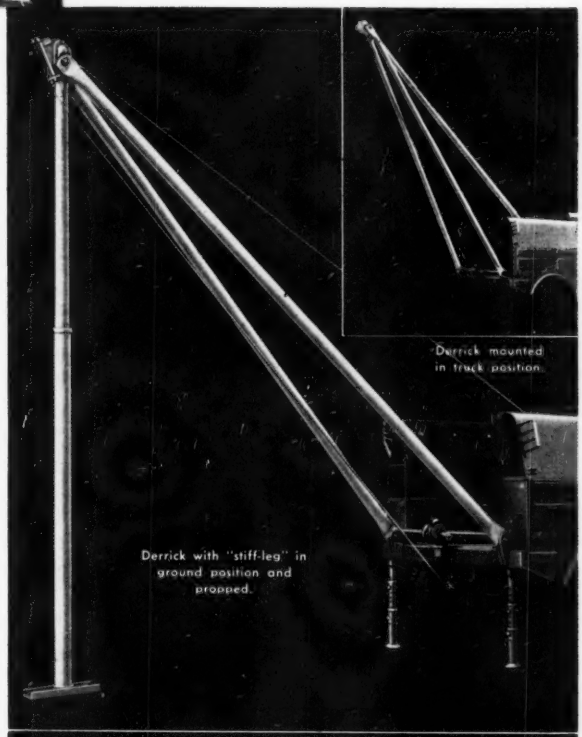
Derrick side — legs easily handled by one man.

The FWD Aluminum DERRICK

- All legs of strong, structural ALUMINUM — 45% less weight — easy handling.
- Legs have reinforced, die-formed heads for greater strength.
- Derrick head equipped with roller guides — for cable protection and longer cable service life.
- Less set-up time required—greater safety for crew men — lighter weight side-legs can be easily handled by one man.
- "Stiff-leg" telescopic with free, easy adjustment to various heights.
- Telescopic side-legs provide for compact, easy transportation.
- Available in 2 models of tripod type derricks. Pole size handling range up to 55 ft., lifting capacity range up to 7200 lbs. in truck position and up to 12,000 lbs. with "stiff-leg" in ground position.

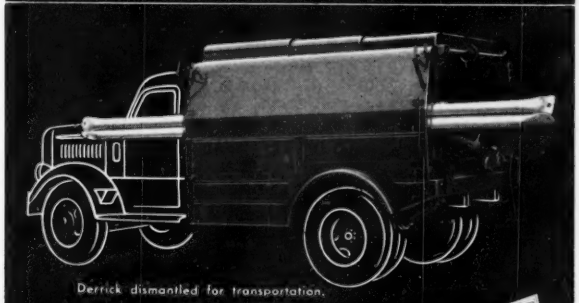
This modern, strong, dependable, all-aluminum pole derrick answers a long-felt need and offers the important advantage of 45% less weight. It was developed and perfected by FWD—a specialized manufacturer of utility line construction-maintenance tools and equipment, engineered by and for utility men expressly for their needs.

For complete information and prices see your Graybar Distributor or write—Eagle Manufacturing Co., 414 E. Winnebago Street, Appleton, Wisconsin.



Derrick mounted in truck position.

Derrick with "stiff-leg" in ground position and propped.



Derrick dismantled for transportation.

FWD

Distributed by Graybar

Manufactured by

EAGLE MANUFACTURING CO.

Division of The Four Wheel Drive Auto Co.

APPLETON, WISCONSIN

Write today for the complete catalog of FWD Line Construction and Maintenance Equipment — the reference catalog.

HE'S DELIVERING ANOTHER LOAD OF CENTRAL RIGID STEEL CONDUIT

CENTRAL ~~SPANS~~ CONDUIT

● Yes, you can depend on your Central Rigid Steel Conduit Distributor for rocket-fast delivery of nearly all the things he has for sale.

What's more you can depend on him for quality products and materials . . . like Central Rigid Steel Conduit. It has always been known for its fine bending, threading and cutting qualities. And the complete stock of Central Black, Cenlaco or Central White Rigid Steel Conduit carried by your distributor, makes it easy for you to get the type of electrical raceway that best suits your requirements.

When you need conduit or other electrical supplies, contact your Central Rigid Steel Conduit Distributor first . . . you'll find that he's a dependable source of supply.

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Division of The National Supply Company
General Sales Office: Grant Bldg., Pittsburgh, Pa.
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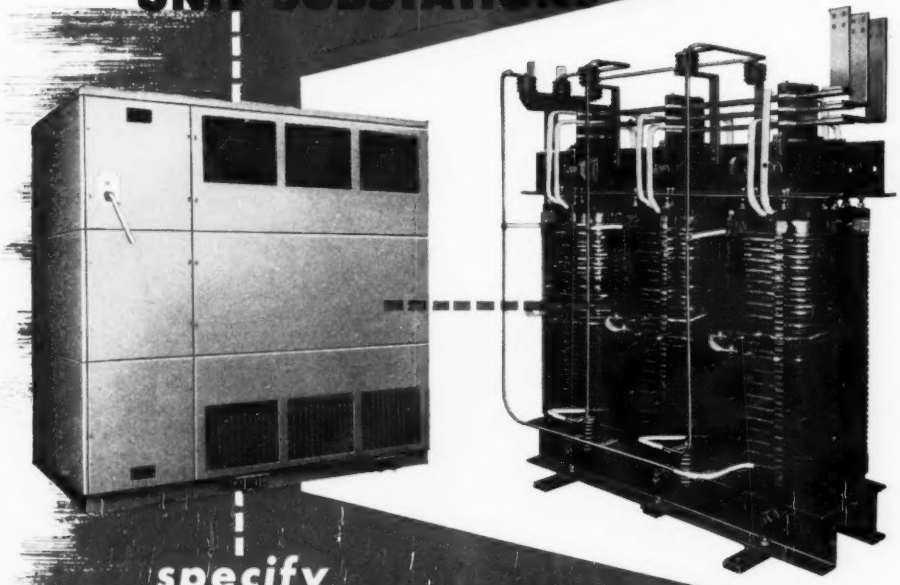
CENLACO a hot dipped galvanized and lacquered finish, inside and out.

CENTRAL WHITE electro-galvanized outside and black enameled inside.

CENTRAL BLACK permanent, baked-on black enamel finish, inside and out.

when buying

UNIT SUBSTATIONS



specify

Wagner TRANSFORMERS

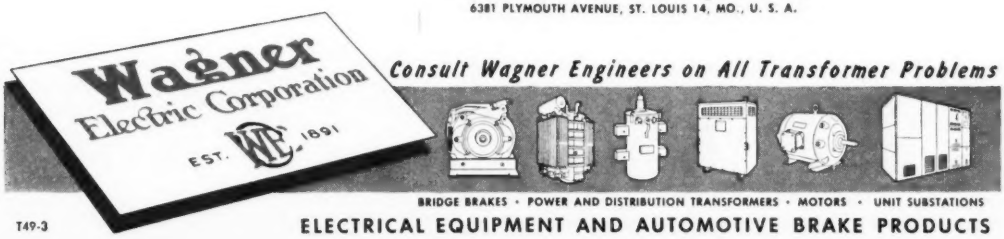
AVAILABLE IN RATINGS FROM 100 TO 2000 KVA

More than fifty years of transformer building experience has been incorporated in the design and construction of Wagner dry-type load-center transformers. Especially developed to meet industry's need for larger transformers for use in plant power distribution circuits, these units are compactly housed in neat, attractive enclosures, which can be arranged to include primary and secondary switchgear compartments to form readily accessible, closely-coupled unit substations. Complete enclosure of all equipment protects against accidental contact with live parts. Relatively light in weight, so they can be used in multi-story buildings, they are readily adaptable to any installation requirement.

Bulletin TU-56 describes in detail the transformers, the enclosures, the various types of incoming line sections available, and the optional equipment and accessories that can be furnished. Write for your copy today.

Wagner Unit Substation Transformers are also available in oil-filled and Noflamol types. Bulletin TU-181 gives information on the complete line of Wagner Power Transformers.

Wagner Electric Corporation
6381 PLYMOUTH AVENUE, ST. LOUIS 14, MO., U. S. A.



Consult Wagner Engineers on All Transformer Problems

BRIDGE BRAKES • POWER AND DISTRIBUTION TRANSFORMERS • MOTORS • UNIT SUBSTATIONS

ELECTRICAL EQUIPMENT AND AUTOMOTIVE BRAKE PRODUCTS

T49-3

PERMANENTE METALS' new mill in centrally located Newark, Ohio, is one of the world's largest single installations for the production of aluminum conductor.

Here's your new source of Aluminum conductor

Deliveries start next month!

CLIMAXING two years of preparation, first shipments of Kaiser ACSR and Kaiser Aluminum Cable will go forward next month, July.

A full range of standard sizes and standard strandings is being produced.

Initial orders will go to REA-financed Co-ops, U.S. Bureau of Reclamation, Bonneville Power Administration, other power projects and public and private municipal utilities from coast to coast.

If you act now you may be able to take advantage of some early delivery schedules which are still open. Inquire at any office of Permanente Products' nationwide sales organization.

Permanente Metals

PRODUCER OF

Kaiser Aluminum Cable

SOLD BY PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND 12, CALIF. . . . WITH OFFICES IN:
Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Houston • Indianapolis • Kansas City • Los Angeles
Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Portland, Ore. • Seattle • Spokane • St. Louis • Wichita

Also available through General Electric Supply Corporation, Westinghouse Electric Supply Company

Introducing

AN **ALL-NEW** LINE OF

PINCO Triple "L" (LOW LINE-LOSS) CLAMPS

4

Combinations of Triple "L" Clamps for All Applications

1. Forged Aluminum
2. Cast Aluminum-Bronze
3. Forged Steel
4. Malleable Iron

Available for conductors ranging from .12 inch through 2.25 inch diameter.

Prompt delivery on any one of four types listed above.

New Type Clamp Minimizes Line-Loss at Clamping Point

It is generally conceded that the high line-loss caused by clamps is directly traceable to hysteresis and eddy current loss . . . a condition which costs utilities thousands of dollars in power losses annually. Now, after five years of proven service on test lines, Pinco makes available a complete line of *low line-loss* clamps which reduce such losses to a minimum. So, if you are concerned about line losses, it will pay you to investigate the new line of Pinco *Triple "L"* Clamps now! A telephone call, wire or letter will bring you complete information.

The Porcelain Insulator Corporation
769 Main St., Lima, N. Y.

PINCO PRODUCTS ARE WAREHOUSED AND DISTRIBUTED BY

JOSLYN PACIFIC COMPANY
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★ **PINCO** INSULATORS ★

Suspension Insulators . . . Switch and Bus Insulators . . . Distribution Clamps Distribution Pin Types and Guy Strains . . . Transmission Line Fittings . . . Tree Insulators . . . Transformer and Circuit Breaker Bushings . . . One Piece and Multi-part High Voltage Pin Types . . . Suspension and Strain Clamps . . . Indoor Bus Support Porcelain . . . Lightning Arrester Porcelain.

Wrapping pigtails in *one* operation with *one* tape—"SCOTCH" No. 33 Electrical Tape—saves time, gives a quickly applied, neat, permanent job.

Plenty of room in junction boxes when pigtails are wrapped with "SCOTCH" No. 33 Electrical Tape . . . neater and more compact than old style wrappings.

No crowded junction boxes with this PLASTIC-BACKED TAPE

Here's the tape for faster, cleaner splicing jobs—and for a wide range of other uses in electrical construction and repair. "SCOTCH" No. 33 Electrical Tape gives you complete electrical insulation, thorough mechanical protection. Try "SCOTCH" Electrical Tapes in your work. A letter to Dept. EP-6 will bring complete information and a trial roll—you will be under no obligation. Write today.

QUICK FACTS ABOUT
"SCOTCH" No. 33 Electrical Tape

• Tough, impervious plastic backing • Stretchy, conforms to odd shapes • High dielectric (over 7,000 volts) • Thin caliper (.007 in.)

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ELECTRICAL BOOKS

COMPONENTS HANDBOOK, MIT Radiation Laboratory Series No. 17, edited by John F. Blackburn, 626 pages, 6x9, McGraw-Hill Book Co., $8. Codifies available information on properties and characteristics of electronic components. Fixed components—wires, cables, resistors, inductors, and transformers—are treated in first part, which also includes information on various types of contact rectifiers. Second part deals with electro-mechanical devices, potentiometers, variable condensers, rotary inductors, instrument meters, tachometer generators, relays, magnetic clutches, and piezoelectric crystals. Third part is devoted to vacuum tubes, including summary of properties of cathode ray tubes.

VERY HIGH-FREQUENCY TECHNIQUES, Vol. I, by staff of Radio Research Laboratory Harvard University, 554 pages, 6x9, McGraw-Hill Book Co., $14 per set. Presents those techniques, at frequencies above about 100 mc., that are of general interest and value and which were developed during course of work at the Radio Research Laboratory. Provides a comprehensive treatment of antennas, direction-finding systems, generation of continuous wave power, and reception of signals. Particular reference is made to conditions permitting broadband or tunable operation as contrasted with fixed frequency operation of radar.

INDUSTRIAL ELECTRICITY, Volume II, Alternating Currents, by William H. Timbie and Frank G. Willson, 718 pages, 6x9, John Wiley & Sons, $5.95. Explains modern alternating-current theory and practice without higher mathematics. Is a shorter treatment of the material in the two-volume Alternating-Current Electricity and Its Application to Industry, by Timbie and Higbie. Arrangement of book makes it equally suited to schools and individuals. Many examples and problems are given.

BASIC ELECTRICAL ENGINEERING, by George F. Corcoran, 449 pages, 6x9, John Wiley & Sons, $4.50. A textbook designed especially for use in an introductory course in electrical engineering. One of its many features is the simple and direct method by which magnetic field concepts are handled. Maintains throughout a level suitable for beginners. D-C theory is considered with circuit analysis by the mesh and nodal methods, followed by electric field theory, magnetic field theory, inductance, capacitance and non-linear circuit elements. Well illustrated with a wide range of problems.

PATENT LAW, second edition, by Chester H. Biesterfeld, 267 pages, 6x9, John Wiley & Sons, $4. A book for researchers, chemists, engineers, patent attorneys and inventors. Presents basic principle of substantive patent law in terms the general reader can understand. Revisions in second edition have been extensive. Recent court decisions have been added illustrative of modern ideas of the courts. "Uses," "double patenting," "disclaimer" and "trade secrets" have been rewritten.

Hold-Closed

till the right fuse blows

a new concept in recloser operation!

G-E invites you to consider a different concept, the alternate operating function built into the FR-1 Recloser. Suppose a recloser, after its two instantaneous openings, HOLDS CLOSED *but only until the right fuse blows*—then automatically resets for instantaneous openings—ready to again clear temporary faults. What then?

FIRST— Fewer reclosers would be needed for complete protection. Where reclosers would ordinarily be required, you could use co-ordinating fuses instead.

SECOND— Fewer consumers would be affected by permanent faults, because the "hold-closed" function lets you use more co-ordinating fuses. You can break up a feeder into five, six or even more sections, each protected by a progressively smaller fuse. When the recloser holds-closed, it *forces* the *right fuse* to clear a permanent fault, thus confining outages to smaller areas.

THIRD— You can pick up the load after an outage without by-passing the recloser. No need to worry about inrush and motor starting currents because the recloser can't lock open—it holds closed, picks up the load, then automatically resets to normal position.

General Electric believes that on rural lines, this "hold-closed" function is the answer to lower cost protection, fewer outages per consumer and faster service restoration. Therefore, its new recloser, the FR-1, has been designed to embody this exclusive "hold-closed" function. Conversion from conventional operating function to "hold-closed" function can be made in the field. With this "hold-closed" function, the recloser opens twice instantaneously, each opening followed by a 1-second reclosing. This clears non-persistent fault without damage to fuses. If the fault is persistent, the recloser then ***holds closed***—but only long enough for the fuse to blow and clear the fault—whereupon the recloser quickly resets, ready to go again.

The FR-1 recloser can also be used with the conventional operating function—two instantaneous openings, plus two time-delay openings, to lock open. Because the time-delay openings are controlled by a highly accurate mechanical-escapement timer, operating in air, the FR-1 is not affected by temperature or condition of oil—thus permitting *reliable* year-round co-ordination with more ratings of fuses than any other conventional lock-open type of recloser. Because the FR-1 resets 5 times faster it gives *more* protection.

For the full story on the new "hold-closed" function, including complete application information, write for Bulletin GER-131. *Apparatus Department, General Electric Company, Schenectady 5, New York.*

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

The big news in insulation is HARVEL 1012C...an outstanding development by IRVINGTON which provides an insulating varnish with *far greater bonding and cementing qualities than the numerous thermo-setting varnishes tested.* It's a very fast curing resin... absolutely oil-proof, and with excellent resistance to moisture and high temperatures. Unequalled for windings operating at high peripheral speeds as well as those subject to great stresses and strains.

Full information and generous test samples of HARVEL 1012C will be furnished on request. Write today.

STANDARD OF THE WORLD
IRVINGTON INSULATION
TRADE MARK REG. U.S. PAT. OFF.

IRVINGTON
Varnish & Insulator Co.
Irvington 11, New Jersey

Authorized distributors in Baltimore; Berkeley; Bluefield, W. Va.; Boston; Charlotte; Chicago; Cleveland; Dallas; Denver; Los Angeles; Milwaukee; Minneapolis; New Hartford, N. Y.; New Orleans; New York; Philadelphia; Pittsburgh; Portland, Ore.; St. Louis; Seattle; Hamilton, Ontario, Canada.

Represented in the Western States by
C. D. La Moree, Los Angeles, Berkeley, Seattle; Electric Motor Supply Co., Denver

PRODUCT NEWS

Cable (600)

Triangle Conduit & Cable Co. has an improved Glazon Triex non-metallic sheathed cable claimed to cut by 80% the time required to prepare for stripping. The construction is said to eliminate individual wrapping over each wire and, instead of 2/64-in. rubber insulation on the smaller sizes (14 and 12), 4/64-in. thickness of rubber is applied to the tinned copper conductors.

The Glazon outer covering utilizes an inorganic substance derived from glass and, according to the manufacturer, cannot burn, rot or corrode; is not affected by moisture, sunlight or strong fumes. This cable is listed by Underwriters' for 600-volt service; is available with two or three conductors, solid or stranded, with or without ground wire, in sizes from No. 14 through No. 4.

Silicone Insulating Resin (601)

A silicone insulating resin designed to permit electrical equipment to operate at temperatures as high as 180°C has been developed by General Electric and designated as G-E silicone resin No. 9989-1. According to the announcement, this thermosetting insulation has general application for impregnating spun glass and asbestos wire coverings and for binding coils, windings and other motor, generator and transformer parts. It is said to have excellent dielectric strength and superior heat and water resistance and to dry tack free in less than 30 minutes at relatively low temperatures; to be curable to a tough flexible film. It can be cured in conventional equipment at baking temperatures up to 250°C and has a solids content of 60% and an average viscosity of 200 cp. at 25°C, the company states.

Plastic Foam Insulation (602)

A Westinghouse chemist has developed for use as an insulating material a plastic foam that expands to 100 times its original volume when baked. Lighter than some gases, the new material weighs from 10 to 20 times less than the meringue on a pie, according to the announcement. It is resistant to fire, moisture, fungus growth and insects; is said to be low enough in cost to be practical for many applications. It is made from a synthetic phenolic resin, is reddish brown, has a sponge-like appearance.

Plastic Tarp (603)

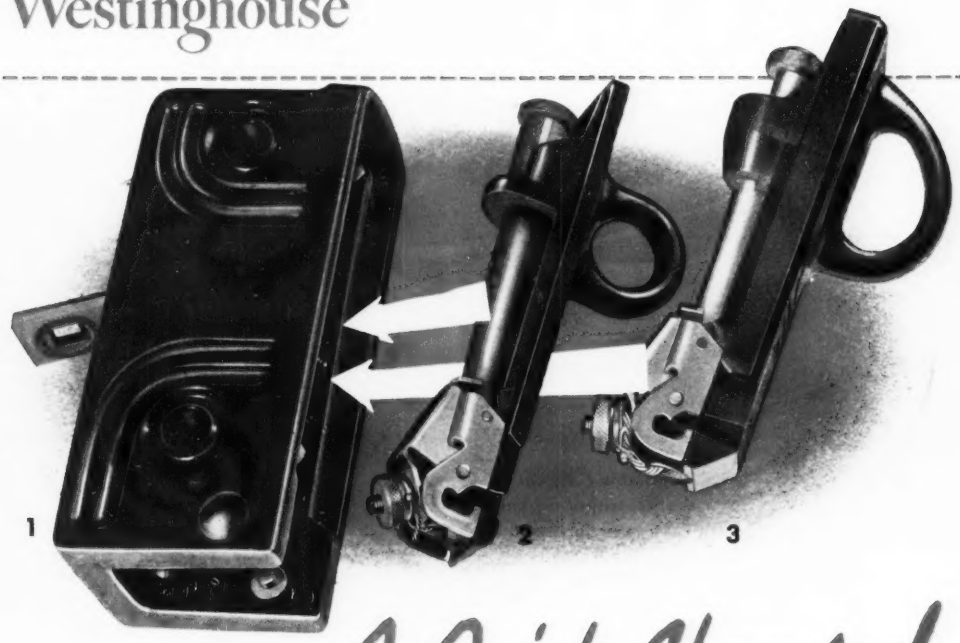
A tarp fabricated of heavy-gage Vinylite plastic is offered by Plastic Sheeting Co. It is transparent; according to the manufacturer, may be thrown over bare wires without creating noise or disturbance for customers.

Lamp-Basing Cement (604)

Development of a new high-temperature lamp-basing cement has been announced by Westinghouse. Tests show that it will not deteriorate in temperatures as high as 446°F, the announcement states.

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



A Quick Changer!

...for fast re-fusing..for future expansion

Interchangeability keynotes Westinghouse porcelain-enclosed cutouts. Only Westinghouse gives you this versatility in line protection. Consider what this means:

First, fuse replacements are fast . . . safe . . . easy. Lineman removes door with hookstick—replaces it with a fused door. Fuse links can be replaced at the truck or in the shop.

Second, as line capacity outgrows the cutout interrupting rating, the EA cutout door may be replaced with the new Type HC (high interrupting capacity) door—either dropout or non-dropout type. That's because *any* door will fit *any* housing.

In addition, you get greater safety; complete hookstick operation; 180° dropout for clear indication of blown fuse; cool operation; light weight combined with great mechanical and electrical strength.

These cutouts are available now in a range of sizes to meet your requirements. See the versatility of this cutout. Ask your nearby Westinghouse representative or distributor for a personal demonstration and Booklets B-3833 and B-4299. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-60705

1. PRESTITE PORCELAIN HOUSING—50-ampere, 5-kv, identical for both Type EA and Type HC cutouts.

2. MOLDARTA TYPE EA DOOR—1,200-ampere interrupting capacity.

3. MOLDARTA TYPE HC DOOR—Interchangeable with Type EA cutout door. Interrupting capacity 8,000 amperes at 2,500 volts, 5,000 amperes at 5,000 volts.

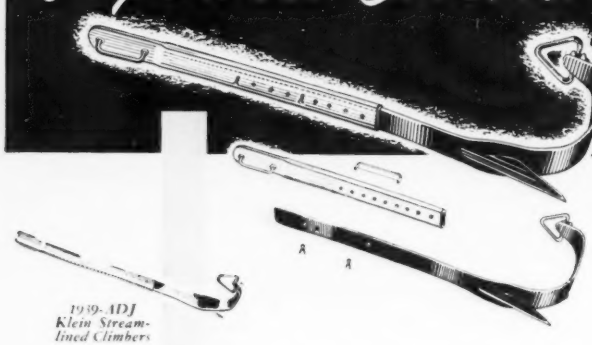
Westinghouse

FUSE CUTOUTS

FOR ANY SYSTEM

KLEIN

Adjustable Climbers



1939-ADJ Klein Streamlined Climbers

1901-M-ADJ Klein Standard Climbers

1903-ADJ Klein Lightweight Climbers

1945-ADJ Klein "Polemaster" Climbers Matched right and left

Adjustable climbers do away with the necessity of stocking many sizes. They assure proper fit both in summer when light shoes are worn and in winter when heavy overshoes are needed.

Klein Adjustable Climbers are made of forged steel, individually tempered and tested—the same high quality that has always been associated with the name Klein. Adjustable sleeve is seamless, one-piece construction, permitting climber to be adjusted to 15, 15½, 16, 16½, 17, 17½, and 18 in. sizes. It is secured to the shank of the climber by a steel bracket engaging through two holes and is secured with cotter pins. Write for Bulletin giving full information.

ASK YOUR SUPPLIER
Foreign Distributor: International Standard Electric Corp., New York

This Bulletin giving complete information on Klein Adjustable Climbers will be sent on request.

Mathias KLEIN & Sons
Established 1857 Chicago, Ill., U.S.A.
3200 BELMONT AVE. CHICAGO 18, ILL.

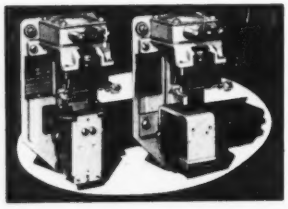
Gasketing Material (605)

Chrome Lock, a zinc chromate impregnated gasketing material, is offered by Products Research Co. According to the manufacturer, it is primarily a protective gasketing, providing exclusion or retention of air, water, dust and bulk conveyed materials. It is available in tapes, sheets or stampings. When installed between two faying surfaces, under bolted or screwed pressure, it is said to form an absolute dam. Its properties are claimed to include: corrosion prevention, electrolysis prevention between dissimilar metals, pressure sensitive resistance, non-oxidation, compressibility and resistance to water and saline solutions. Introduced several years ago for the maritime industry, it is offered now for such uses as air conditioning and refrigeration.

Appliance Switch (606)

Slater Electric & Mfg. Co.'s new No. 117 appliance switch is rated 15 amp., 125 volts; is said to be suitable for all types of appliances and apparatus that requires a 15-amp. load and at least 50,000-85,000 "ons" and "offs." According to the manufacturer, it has extra heavy contacts, which are free from pitting and arcing; mounting holes are spaced 2⅜ in. center to center; bakelite body measures 1⅜ in. long, ⅞ in. wide, 1 in. deep.

Pneumatic Timer (607)



A new d-c pneumatic timer, class 9050, announced by Square D, is similar in construction to the company's a-c design. Features include timing with less than 10% variation, plus or minus, from the mean timing period; timing period is adjustable from 0.2 seconds to 3 minutes; finger-tip setting of knurled knob or micrometer dial; snap-action contacts, normally open and normally closed in self-contained arc-resistant melamine case, rated for a-c or d-c control circuits; electrical interlocks, operated by the magnet that actuates the timing mechanism, frequently eliminating need for additional switching relays.

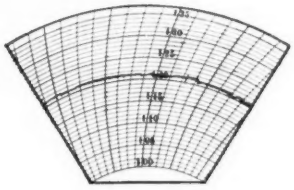
Smoke Density Indicator (608)

A smoke density indicator and control announced by G-E consists of a light source, phototube holder and an enclosure containing the control and incorporating an indicator calibrated in Ringlemann units, all in one packaged unit. If desired, a recorder, either of the continuous-strip chart or the circular step-type can be furnished.

In operation, a magnetic relay is set to operate when smoke density reaches a predetermined level, at which time a blower forces over-the-fire heated air to the firebox until the smoke density drops to approximately 15%. Should the smoke density again rise, the relay is immediately energized. Each time the relay operates, an alarm is sounded.

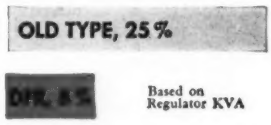
4 Reasons Why ...You Get Closer Regulation ...Lower Operating Costs with Allis-Chalmers 5/8% Step DFR* Regulators!

REASON 1



Maintains voltages within ± ¾ volt. Simpler, closer regulation made possible with *Feather Touch Control* which follows line fluctuations without damping effect . . . and *Voltage Integrator* which sums up and balances out fluctuations of short duration.

REASON 2



Requires only ⅓ the excitation of other types! Low exciting current releases system capacity for useful loads (specific information available).

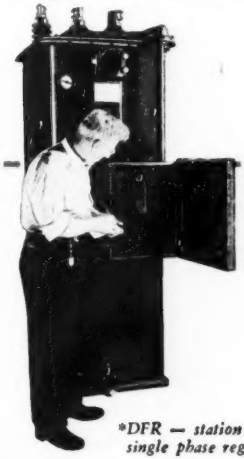
REASON 3

Regulation	Amp. Capacity*
±10%	100%
±8¾%	114%
±7½%	133%
±6¼%	160%
±5%	200%

*400 amps. max.

Up to 200% base current capacity in as many as five intermediate steps. Simple 30-second *Vari-Amp* adjustment adapts regulator to increased load current of growing power demand (with corresponding adjustment in regulation range).

REASON 4



DFR — station type single phase regulators

Proved low maintenance. Hundreds of thousands of tap changes under actual service conditions . . . these are records made possible through (1) balanced spring tap changing mechanism, (2) small 5/8% steps, and (3) *Elkonite* RS-1045 contacts.

You can *boost load capacity* of feeders, *increase revenue,* and *improve customer good will* by controlling line voltages with Allis-Chalmers 5/8% step regulators. Have your A-C sales representative call and discuss these regulators in terms of specific advantages to your system. Or write direct.

ALLIS-CHALMERS, 939A SO. 70 ST. MILWAUKEE, WIS. A-2671

Vari-Amp is an Allis-Chalmers Trademark

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

"Originators of the 5/8% Step Regulator!"

Do *Your* "20 Amp." Circuit Breakers Carry 20 Amps. Continuously?

UL — Underwriters' Laboratories, Inc. — Listed Under Reexamination Service

Even in

COMPACT PANEL BOXES?

OVERHEATED ROOMS?

DIRECT SUNLIGHT?

NOT if they trip by Thermal Elements!

Insist on Murray FULLY MAGNETIC Circuit Breakers...

- ***NO*** **Thermal Element**
- ***NOT*** **Affected by Heat**
- ***NO*** **False Tripping**
- ***NEVER*** **Need "Derating"**

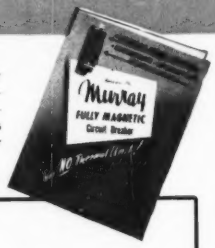
- ***ALWAYS*** **Carry Rated Load Continuously**
- ***ALWAYS*** **Carry Harmless Temporary Overloads**
- ***ALWAYS*** **Trip Instantly on Dangerous Overloads**
- ***ALWAYS*** **Can Be Reset Immediately After the Overload Passes**

This 8 circuit load center comes with 4, 6 or 8 Murray *Fully Magnetic* Breakers. Also available are 2 circuit and 4 circuit load centers.

Single pole breakers in 10, 15, 20, 25, 30, 35 and 50 amp. ratings. Only two handle positions — Off and On.

Each breaker can be individually replaced with breaker of same, lower or higher rating

Get the full facts on Murray *Fully Magnetic* Circuit Breakers. Operating characteristics and construction features are given in this informative folder. Write for your copy *now*.



FOR TOMORROW'S LOADS...
Equip Today!

Murray

MANUFACTURING CORPORATION

50 Years of Service to the Electrical Industry

1250 ATLANTIC AVENUE • BROOKLYN 16, NEW YORK

SERVICE ENTRANCE & METER EQUIPMENT • MAGNETIC CIRCUIT BREAKERS
SWITCHES • CURRENT LIMITING REACTORS • CROWS'NEST AERIAL LADDERS

Why I prefer to sell fixtures equipped with

Certified Ballasts!

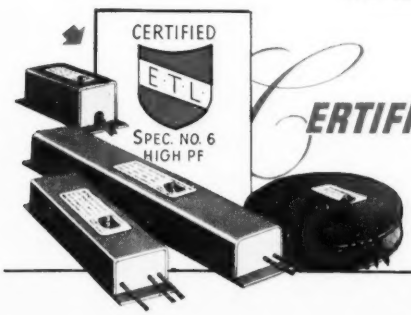
As a contractor, I hear the complaints when fixtures prove unsatisfactory. I can't afford repeated customer gripes, so I handle only fixtures that are equipped with Certified Ballasts.

They assure me—

Full lamp life **Quiet operation**
Rated light output **Reliable performance**

Certified Ballasts are made to rigid specifications—then tested and checked by impartial Electrical Testing Laboratories, Inc. That's why they're really reliable.

By insisting on Certified Ballasts I keep service worries to a minimum and keep my customers happy.



CERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO

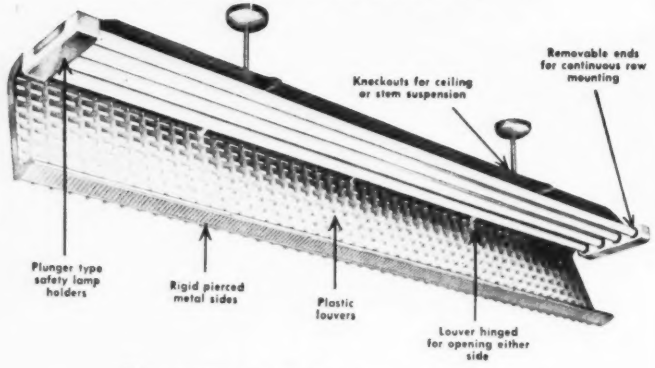
OUTSTANDING!

SMOOT-HOLMAN'S

New

CONSTELLATION

SLIMLINE FLUORESCENT


Removable ends for continuous row mounting
Knockouts for ceiling or stem suspension
Plunger type safety lamp holders
Rigid pierced metal sides
Plastic louvers
Louver hinged for opening either side

This outstanding luminaire utilizes the brand new high output 75 watt, 425 m. a. T-12-96" fluorescent lamp. It is scientifically engineered to produce the utmost in lighting quality and efficiency.

WRITE FOR CIRCULAR

SMOOT-HOLMAN COMPANY
SMOOT-HOLMAN
INGLEWOOD CALIFORNIA
MADE IN U.S.A.
®

Offices in Principal Western Cities—Branch and Warehouse in San Francisco

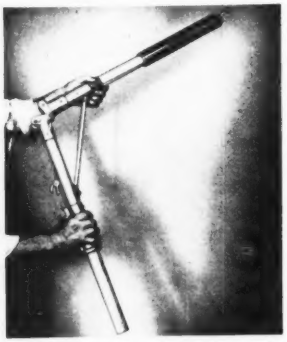
Bearing Tool (609)

A new tool developed by Wagner Electric Corp. is claimed to permit removal of worn sleeve bearings from motor endplates and insertion of new bearings in one operation. The tool consists of a steel rod, accurately finished to accommodate precision bored bearings on one end, and unbored bearings (for undersize shafts) on the other. A central shoulder separates the two ends.

The new bearing is slipped on the rod, its unchamfered end against the shoulder of the tool. A spacer, furnished with the tool, is slipped on with its unchamfered end against the new bearing. The end of the tool is then inserted in the old bearing, from the inner side of the endplate. The new bearing should be positioned on the tool so that its oil wick hole lines up with the hole in the old bearing. A press or a rawhide mallet is then used to drive the tool until its shoulder seats against the endplate. The spacer forces out the old bearing, and the new bearing, as it is pushed into its proper position, forces out the spacer. The old bearing acts as a pilot, assuring correct alignment of the new bearing, according to the manufacturer, and no reaming is required.

This tool is available in four sizes for motors with finished bearing sizes of 0.655, 0.751, 0.812 and 1.062 in.

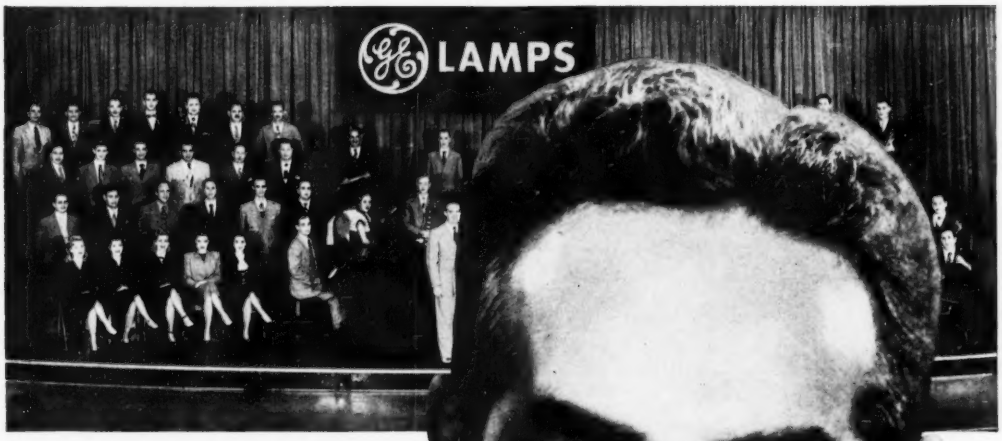
Clamp Stick (610)



The Chance hinged Grip-all clamp stick folds in the middle for carrying in limited space; when extended latches itself in open position. The hinge is operated by pushing a spring button release. A sliding hand grip opens, closes and retracts jaws, which may be locked in any position by a hex head screw and safety catch. Tap or grounding clamps may be pulled down into the barrel and locked to hold the stick and clamp rigid as a single unit for easy control of the clamp. When the stick is not in use, jaws may be retracted into the barrel. The lower half of the operating rod is double hinged. The poles are tested to 75,000 volts per foot for five minutes before shipment.

Line Guards (611)

Tenite spiral guards for power lines are offered by Preformed Line Products Co. No special tools are required for installation; ends of both strips are applied around the wire and the two lengths are spiraled together. In place, they form a tubular sleeve, said to be flexible and light weight and to provide good protection against abrasion by trees, etc.



Sales story that hits "home" millions of times!

THE FRED WARING RADIO SHOW

Selling G-E Lamps every Thursday evening over NBC coast-to-coast

EVERY Thursday evening Fred Waring and a brilliant cast of 60 stars are reaching millions of homes from coast to coast to help you set new sales records with G-E Lamps and other General Electric products.

It's a bright, sparkling show that catches customers' ears with good music, fun, and the cleverest commercials on the air, all aimed at building lighting load. The Fred Waring Show is one of your best salesmen, with sales-talks that are sure to ring the bell on your cash register.

The Fred Waring Show is *your* show . . . working for you . . . taking *your* story across the nation every week—making America more conscious of better lighting than ever before.

GENERAL ELECTRIC

GUTH SLIMLINE TRUCOLITES*

with the New 75W Slimline Lamps
Open a New Lighting Sales Horizon!

The new 75W T-12 Slimline Lamps produce more lumens per foot! The new **Guth Slimline Trucolite** delivers more of these extra lumens to the working area.

Its reflector is a time-tested, superior light producer—the first Slimline fixture with downlight reflectors for maximum footcandle results.

It is easy to install—even one man can do it! It is versatile, for 2 or 4 lamps—for 200, 300 or 425 MA. operation.

939

Cash in on the profit-packed **Slimline** advertising—send for Bulletin 852-C from

Guth LIGHTING

YOUR TEAMMATE IN *precision-planned* LIGHTING

THE EDWIN F. GUTH COMPANY / ST. LOUIS 3, MISSOURI

*Ⓡ—U. S. Patent Nos. 122586, 2331774

Leaders in Lighting since 1902

Starters (612)

Ward Leonard has developed a new line of a-c magnetic reversing starters, across-the-line type. Designed for industrial control applications, starters with three poles are available for across-the-line starting and reversing of polyphase motors to 200 hp., 550 volts, 60 cycles inclusive. The 4-pole starters, with ratings of 7½ hp., 500 volts, 60 cycles maximum, are suitable for use with externally reversible single-phase motors of the 4-wire split phase, capacitor or repulsion induction types. Starters consist essentially of two magnetic contactors interwired for reversing operation, mechanically interlocked, with or without thermal overload protection. Standard starters have sheet steel NEMA type 1 general-purpose enclosures but on special order can be furnished without enclosures for built-in or switchboard applications.

Motors (613)

A new line of unit-bearing, shaded-pole FHP motors for portable equipment has been introduced by G-E. Designated as type KSP71, the new motors come in these ratings: 1/40 hp., 60/50 cycles, totally enclosed; 1/25 hp., 60 cycles, totally enclosed; 1/15 hp., 60 cycles open. All ratings are available for 115 volts or 230 volts and for CW or CCW rotation.

Servo Motor (614)

Square D has announced a new Kollsman a-c servo motor. It is a 400-cycle, 115-volt, 2-phase, 4-pole induction motor with a torque to inertia ratio of 26,300 radians/sec./sec.; can reverse fully in 2/10 of a second from 11,200 r.p.m. It delivers 2½ oz. in. stall torque which varies directly with the control winding voltage. The new motor is 1¾ in. in diameter; 1⅝ in. long and weighs 6.1 oz.

Where higher acceleration is more important than small size and light weight, another new Kollsman servo motor has been developed. This is a 4-pole motor with a torque to inertia ratio of 46,000 radians/sec./sec. and a stall torque of 3.8 oz. in. It is 2.3 in. in diameter, 2 3/16 in. long, weighs 15 oz.

Exhaust Fans (615)

Six new ball-bearing, belt-driven exhaust fans in 36-, 42- and 48-in. sizes have been announced by Emerson Electric Mfg. Co. These fans have ball-bearing motors and ball-bearing pillow blocks to absorb the thrust load of the fan; may be installed to discharge vertically, horizontally or at any angle without injury to motor or fan-blade assembly, the manufacturer claims. Fan capacities range from 10,200 to 19,350 cu. ft. of air per minute.

G-45-30-2-P

What does this FLEUR-O-LIER INDEX SYSTEM NUMBER MEAN?

In a specification, it denotes the exact kind of lighting performance desired. "G" stands for General Diffuse lighting distribution; "45" for 45° side shielding; "30" for 30° end shielding; "2" for a brightness in shielded zone of not more than 2½ footcandles per square inch; "P" means Pendent mounting.

For a fixture, those symbols mean that Electrical Testing Laboratories, Inc., after photometric tests, find it has those performance characteristics.

Thus, it is now possible for the specifier to express simply and precisely the lighting performance he wants. And the buyer can now buy fixtures and know in advance how they will perform when installed. For, in addition to the Index System rating, complete photometric data, together with coefficients of utilization are supplied for each Fleur-O-Lier fixture,

And the Fleur-O-lier label certifies that the fixture is "right" mechanically and electrically.

Fleur-O-Lier Gives *Complete* Information —

All the data needed to make an intelligent choice of fixtures is provided by Fleur-O-Lier. You get—

1. An Index System Rating
2. Photometric test data
3. Coefficients of Utilization
4. Certification

You're *sure* when you insist on Fleur-O-Lier.

FLEUR·O·LIER

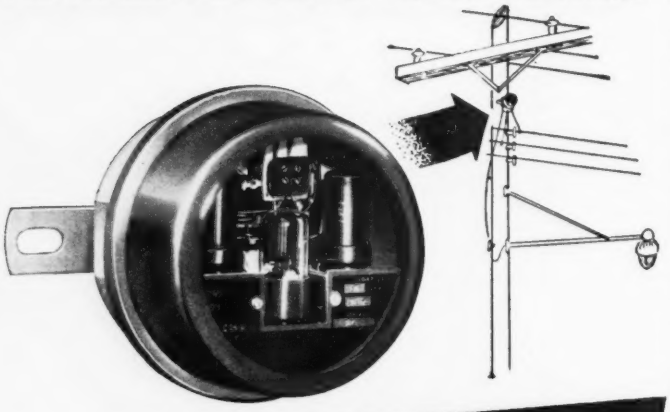
Manufacturers

2116 Keith Building • Cleveland 15, Ohio

Fleur-O-Lier is not the name of an individual manufacturer, but of a group of fixtures made by leading manufacturers. Participation in the Fleur-O-Lier program is open to any manufacturer who complies with Fleur-O-Lier requirements.

FISHER-PIERCE

PHOTOELECTRIC STREET LIGHT CONTROL



AUTOMATIC CONTROL For Multiple or Series Lighting

FISHER-PIERCE CONTROLS OFFER:

A. Improved Quality of Lighting Service — Fisher-Pierce controls give guaranteed turn-on of street lighting when it is needed. Only a photoelectric control can give positive light control independent of conditions of daylight, weather, or climate.

B. Lower Cost Lighting — Separate street lighting circuits may be entirely eliminated. Individual street lights, or lights for an entire street can be connected directly to the 120 or 230 volt distribution lines.

C. Reduced Maintenance Cost — Fisher-Pierce units have a conservatively designed electronic circuit resulting in nominal tube life of over 20,000 hours. Plug-in construction of the entire chassis permits easy servicing. No resetting is required after power interruption.

SOME OF THE OUTSTANDING DESIGN FEATURES ARE:

1. Contact capacity of 500 or 3000 watts of incandescent lamp load.
2. Completely weather-proof enclosures. . . .
3. Mounting suitable for either cross-arm or pole surface.
4. Fifteen second time delay to prevent false operation from lightning, passing automobile headlights, or other light transients.
5. Models for 120 and 230 volts, 50-60 cycles.

Also available are Special Models for Outdoor Signs, Billboards, Aircraft Obstruction Lights and other light control applications. Units can be shipped from stock. Write today for further information.

The FISHER-PIERCE COMPANY, INC.

43 CEYLON ST., BOSTON 21, MASSACHUSETTS

Transformers (616)

A new line of Westinghouse 3-phase CSBP transformers is designed for 4-wire, 208Y/120-volt secondaries; is said to permit 3-phase banked-secondary operation without possibility of cascading or reverting to radial operation. According to the announcement, these transformers, when used in banked-secondary systems, reduce light flicker resulting from motor loads, increase service reliability and reduce necessary installed capacity. Available in 75-kva. rating in standard high-voltage ratings from 2,400 to 14,400 volts.

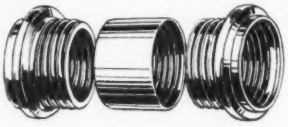
Instrument Transformer (617)

An instrument transformer for outdoor service has been announced by G-E and is designated as type JEA-3. The new potential transformer is of sealed construction with a mounting bracket that permits mounting in any position; is available in ratings of 2,400: 120 volts and 4,800:120 volts, 60 cycles. Both types have insulation for a 60-kv. full-wave impulse level.

Transformer Line (618)

Pennsylvania Transformer Co. has announced that its new line of standard parts power transformers is available in three phase, 10,000 kva. and below, up to 34.5 kv.; single phase, 5,000 kva. and below, up to 34.5 kv.

Coupling (619)



Tomic's No. 311 ¾-in. EMT coupling was designed to screw in on straightaway jobs and snap in on corner jobs. According to the manufacturer, this coupling has simple, strong construction; enables electrician to change from conduit to thin wall in the middle of a job, without special fittings.

Grid Bias Cell (620)

P. R. Mallory & Co. has a new miniature-type grid bias cell to provide a constant potential for bias of electronic tubes and circuits, where no current is required of the cell. The cell is available in two voltages, 1.5 and 1.75. Since it is a potential device only, its EMF is lowered by even a fraction of microampere drain, but it is unaffected by alternating current of any frequency, the manufacturer says. At audio frequencies, the cells have a non-reactive impedance of between 250 and 1,500 ohms. Satisfactory operation can be had over a range of −60°C. to +60°C. it is stated.

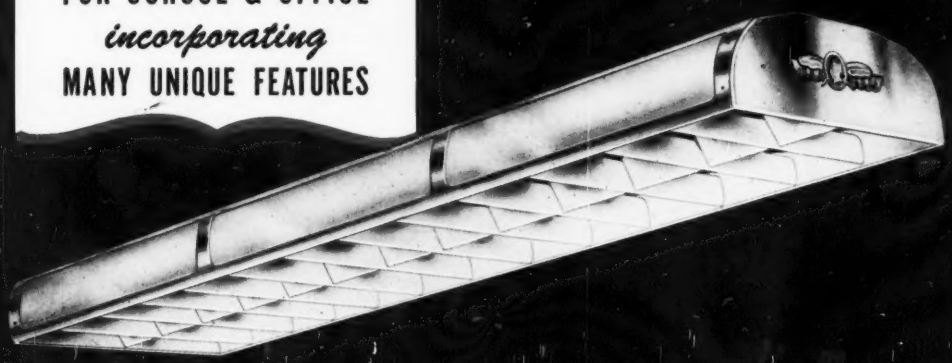
Octagon Cable Boxes (621)

Keystone Mfg. Co. has added octagon cable boxes to its line. Romex clamps or ½-in. double knockouts on two sides are optional. These boxes may be obtained in galvanized or black enamel finishes; measure four inches across; are shipped assembled in choice of straight, shallow or deep offset bar.

"Something Better Has Come to Light"

3 New UNITS
FOR SCHOOL & OFFICE
incorporating
MANY UNIQUE FEATURES

"The Monroe"
A-5000 SERIES*
FLUORESCENT LUMINAIRES



THREE DISTINCTIVE PITTSBURGH PERMAFLECTOR FLUORESCENT LUMINAIRES combine maximum lumen output and minimum brightness ratios with economical initial cost and low installation cost.

All three "Monroe" Units give both downward and upward light distribution and have 35° crosswise and 25° lengthwise shielding. "Quick release" fittings allow hinging of the baffle-bottom from either side or complete assembly removal. Knockouts permit any type of installation. Adjustable hangers are available for individual or end-to-end pendant mounting.

"The Monroe" 2-Lamp Luminaires are typical of Pittsburgh Permaflector Quality Lighting Equipment designed for efficient performance, easy installation and simple maintenance. Pittsburgh Permaflector Fluorescent and Incandescent Equipment gives you a prestige and highly profitable "packaged" line that brings more customer satisfaction, quicker turnover and greater installation savings. Write today for details.

CONDENSED DATA ON "The Monroe"

A-5240-PL LUMINAIRE*—White translucent plastic side-panels are firmly secured in a one-piece, stamped steel, baked-on white enamel baffle-louvers and reflector. Efficiency —81%.

A-5240-AL LUMINAIRE*—Aluminum side-panels and transverse louvers distinguish this unit. Side-panels are longitudinally embossed for added appearance and strength. Efficiency —78%.

A-5240-ST LUMINAIRE*—Entire unit is 20 gauge sheet-steel. Transverse louvers and longitudinal reflectors are baked-on white enamel. Embossed side-panels are baked-on metallic silver-finish. Efficiency —83%.

Die-formed, metal parts assure precision fit, maximum rigidity and strength. One-piece construction with open bottom allows ready access to wiring channels from below when installing the luminaires. Medallion silhouettes of President Monroe, superimposed over cross-quills, add a decorative note to the ends and conceal knockouts used for continuous-runs.

For Full Details on "The Monroe"

Send for Advance Notice Sheet A-7. For information on other Fluorescent or Incandescent Equipment, request Catalogs 48 and 46 on your letterhead.

*Patent Pending

Pittsburgh Reflector Company
401 OLIVER BUILDING • PITTSBURGH 22, PENNSYLVANIA
MANUFACTURERS OF FLUORESCENT & INCANDESCENT LIGHTING EQUIPMENT
Permaflector Lighting Engineers in All Principal Cities

Pittsburgh Permaflector

PITTSBURGH PERMAFLECTOR LIGHTING EQUIPMENT IS DISTRIBUTED BY BETTER ELECTRICAL WHOLESALERS EVERYWHERE

THE RIGHT APPROACH to *Surface Wiring*

with "UNION'S" *New*

NO. 5020 SHALLOW BOX

GREATER FLEXIBILITY

MINIMUM STOCKS

A COMPLETE LINE

STANDARD WIRING METHODS

1. Box dimensions to fit Standard Handy Type Box Covers.
2. Designed to accommodate all but the largest bodied Duplex Receptacles and Toggle Switches.
3. Color and shape blend attractively with the "Union" line of Handy Box Covers.
4. For use with Nos. 12 and 14 Non-Metallic Sheathed Cable.
5. Installed with standard wiring methods. Thus working parts protected from dust and moisture by two insulating housings.
6. Ideal for farm buildings, garages, attics, basements, etc. Approved by Underwriters' Laboratories, Inc. and R. E. A.

*Obtainable from your regular stock.

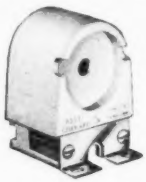
UNION INSULATING CO., INC.
PARKERSBURG, WEST VIRGINIA

Slimline Luminaires (622)

Miller is making new slimline luminaires for commercial and industrial interiors. These units are designed for the 96-in. slimline fluorescent lamp and are a semi-direct type with predominant downward component of light but with sufficient illumination to eliminate undesired contrast between luminaires and ceiling, the announcement states. There are two types—a 2-lamp 96-in. unit and a 4-lamp 96-in. unit. No starters are needed. The unit has aluminum louvers and diffusing side panels of extruded Polystyrene plastic. Push-in type lampholders are provided.

Lampholders (623)

Bryant Electric Co. has announced new lampholders for the T-12 ($1\frac{1}{2}$-in.) slimline fluorescent lamp. They come with removable brackets which permit mounting in any one of four positions, with brackets at front or back and for recessed or surface mounting. They also may be "butt-on" mounted against an end plate. They are made of white bakelite and supplied in matched pairs for high- and low-voltage ends. The lamps must be in place in both lampholders to complete the high-voltage circuit.



Photographic Floodlight (624)

A powerful photographic floodlight throwing a concentrated beam and giving from 7 to 15 times the intensity of sunlight on a bright day has been announced by G-E. Designed especially for high-speed photography, it is claimed to have a speed 500 times that normally used in making movies. It produces 75,000 f-c.; has a burning life of six hours. The lamp will be used in taking movies of extremely rapid action to be studied in slow motion, G-E engineers state. Such photography is employed chiefly in connection with research, design and development work.

Fat Slimline Lamp (625)

Westinghouse had added a 6-ft. tube, the 72T12, to its "fat slimline" series of fluorescents. Diameter of the new lamp is the same as the 8-ft. lamp, $1\frac{1}{2}$ in. It will be offered at various loadings from .400 to .600 amp.; starts instantly and has about the same lumen output per foot of length and surface brightness at identical loadings as the 8-ft. 96T12, so that the two may be used together.

Fixture (626)

Leader's New Horizon slimline fluorescent fixture and Direclite spotlights have been combined, under the name Spotline. Spotlights are adjustable for any lighting angle desired.

Approved Items (627)

S&M Lamp Co. has received Underwriters' approval for two new items: the No. 55 par holder and No. 1100 Yard-Lite.

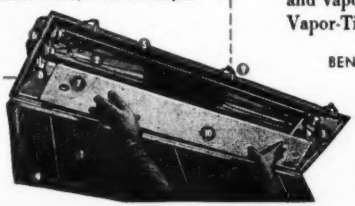
FOR *Modern* LIGHTING

of locations with Adverse Atmospheric Conditions

Specify "SEALED-FLO *40*"

THESE 10 BENJAMIN FEATURES ASSURE BETTER LIGHTING OF DUSTY OR MOIST LOCATIONS

1. A Double-Strength Grade "A" **Clear Glass Cover** also available with heat and impact-resisting glass.
2. **High Light Output**—Twin-Lamp Units have an efficiency of 67% or more of the output of the lamps; Triple-Lamp Units 61% or more.
3. **Porcelain Enamel** on all inner reflecting surfaces, combining a high reflection factor of 82% with a high diffusion factor.
4. **Dust-and-Vapor-Tight Seal** formed by wire reinforced woven asbestos gasket.
5. **"Sealed Bead" Construction**, which resists rust and corrosion.
6. **One-Piece Steel Construction**, completely covered with easy-to-clean **Porcelain Enamel**.
7. Self-adjusting, hand-operated **"Lok-Latch" Fasteners**, which permit easy removal of the reflector plate.
8. Exclusive, unbreakable **"Spring-Lox" Lampholders**, which facilitate relamping and lock lamps into position.
9. **Three Spring Tension Clamps**, which allow easy opening of the cover.
10. **Removable Reflector Plate**, which makes possible easy access to control equipment and wiring.



"Sealed-Flo 40" Fluorescent Lighting Units are designed to solve the problem of how to provide modern lighting in locations where conventional-type fluorescent units do not meet with Underwriters' Laboratories approval. To these many locations in industry where atmospheric conditions are adverse or hazardous, "Sealed-Flo 40" Twin-Lamp and Triple-Lamp Units bring the full benefits of modern fluorescent lighting.

Under such severe operating conditions "Sealed-Flo 40" Units function at peak efficiency and at minimum operating and maintenance cost. Important to such performance is the "One-Piece" construction with an over-all protective coating of durable, easily cleaned Benjamin "Life-Time" Porcelain Enamel.

"Sealed-Flo 40" Units satisfy all requirements of Underwriters' Laboratories for installation in Classes II, III, and IV hazardous locations. Such locations may be found in flour and feed mills, grain elevators, coal chutes, cotton gins, wood-working plants, warehouses storing baled waste, cocoa fibre, Spanish moss, etc., as well as all departments where combustible dusts may create fire or explosion hazards and where maintenance due to dirt and vapor is a problem. "Sealed-Flo 40" Units are also rated as Vapor-Tight by Underwriters' Laboratories.

BENJAMIN ELECTRIC MFG. CO., Dept. J, Des Plaines, Illinois

BENJAMIN

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Distributed Exclusively Through Electrical Wholesalers

R-3173

THE MAGNO-TRONIC FLUORESCENT STARTER

PROTECTS Fully automatic thermal relay with unusually long life that eliminates blinking lights and protects all auxiliary equipment.

SIMPLIFIES Replacement of worn-out lamp automatically restores closed circuit—replacement of starter unnecessary. No button to push.

REDUCES COSTS Magno-Tronic starters provide exact timing in the lamp electrode—preheating process preventing excessive loss of emission material thereby assuring the maximum in the useful life of a lamp. The established quality of this starter saves considerable time in maintenance and man hours required to repair and/or replace an inoperative lighting unit.

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GUARANTEED FOR ONE YEAR

The (SP-15-20) for use with either 15 or 20 watt lamps
The (SP-30-40) for use with either 30 or 40 watt lamps
The (SP-100) for use with 100 watt lamps

Ask for descriptive literature

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R&S LIGHTING FIXTURES

VAPORTIGHT...
EXPLOSION-PROOF...
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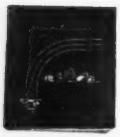
For safe and correct lighting in hazardous areas, count on R & S Lighting Fixtures to stand up better . . . to deliver long-term, top performance . . . because of illumination engineering ingenuity and over forty years' manufacturing know-how.

Scientific design with high reflection factor provides maximum, safe, controlled lighting . . . maintenance-free. Standardized base common to all sizes. Interchangeable reflector globe assemblies of various capacities. Simplified mounting without disturbing electrical connections; with a variety of conduit arrangements in one standard base. Underwriters' laboratories approved.



Write, on letterhead for new catalog H-47-10.

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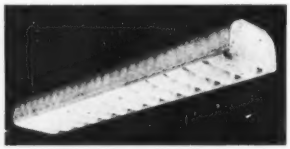
SINCE 1902

Slimline Fixture (628)

Keystone has developed a slimline fixture, available in 2- and 4-lamp 72- and 96-in. sizes, with either destatized plastic or luminous metal side panels. The 96-in. size is available for T8 and T12 75-watt slimline lamps. May be mounted individually or in continuous rows, flush or suspended, and may be used with adjustable spot or flood lights.

F Units (629)

Spero Electric has a new PSB series of fluorescent units for classroom lighting. They are furnished for two 40-watt, with turret-type socket, four 40-watt and two 85-watt lamps; come with perforated, luminous or solid sides; have the travel-hanger device to allow stem placement anywhere along the length of the unit. Reflecting surfaces finished Plasto white 86% reflection factor.



Transformer for Signs (630)

A small, portable transformer designed for counter signs, window displays and decorative neon signs has been added to the G-E line. Compound-filled for quiet operation, the new transformer is available in one universal rating for all applications. It is designed to operate and support up to 17 ft. of 15-mm. neon tubing.

Luminaire (631)

The Guth Mazelite features turret sockets and hinged reflector that may be opened on either side or completely removed. It is of all-metal construction finished in 300° metallic grey Permalux with 300° white reflectors.

Trouble Light (632)

A portable, retractable trouble light, with fingertip control, is offered by the M. Black Mfg. Co. It is an insulated, caged light; has a radius of 25 or 45 ft. from its reel rack. It may be fastened to a ceiling or wall, if desired.

Amplifier (633)

A power amplifier called the Symmetron has been developed by Westinghouse for FM and TV broadcasting and is said to use techniques that make it possible to generate high powers at high frequencies and low cost, using conventional-type transmitting tubes.

Drawing Instrument (634)

A drawing instrument called the Circ-L-Scale is a vest-pocket tool that combines a protractor, compass, square, scale and lettering device. It is manufacturered by L. A. Cuson.

for **reliable starting**
low operating costs
full fluorescent lamp life

USE *CERTIFIED STARTERS*

• Satisfactory fluorescent lighting performance depends to a large degree on the starters you use.

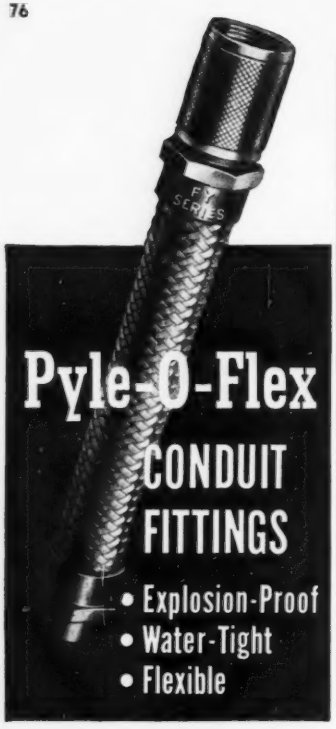
You are assured best results . . . in starter life . . . in lamp life . . . and in maintenance costs . . . when you use Certified Starters.

Certified Starters are made to precise specifications, then are tested and certified by Electrical Testing Laboratories, Inc., an impartial authority. That's why you can always rely on Certified Starters.

• *You'll recognize Certified Starters by the Certified shield on the case and on each starter.*

Certified Fluorescent Starter Manufacturers

2116 KEITH BUILDING • CLEVELAND 15, OHIO



Pyle-O-Flex patented flexible fittings allow a neater installation without the troublesome and costly bending and fitting of rigid conduit. They are ideal for wiring of gasoline pumps, explosion-proof floodlights, motors and other equipment in hazardous locations. Also used for watertight installations of many kinds. Flexibility allows for adjustment of lights if necessary after installation. Flexibility also protects connections against motor vibration.

Pyle-O-Flex Explosion-proof flexible fittings are available in a full range of sizes and standard lengths. Can be used with Pylet explosion-proof elbows and unions.

Consult your Pylet Catalog for complete listings.

THE PYLE-NATIONAL COMPANY

1364 N. Kostner Ave., Chicago 51, Ill.

Pacific Coast Sales Office
25 Beale Street, San Francisco 6, Calif.

BULLETINS ETC.

Electrical Tape (635)

Scotch brand electrical tape No 33 is described in a new brochure from Minnesota Mining & Mfg Co This tape is listed by Underwriters' for temperatures as high as 176° F. According to the manufacturer, tests show the tape has 125% stretch, excellent aging properties and sufficient toughness to be used on feeder cables for quarry shovels. It is 7 mils thick, has a dielectric strength of more than 7,000 volts. The folder includes tables of chemical and physical properties and 12 application photos.

Synchronous Motors (636)

Operating and construction features of Allis-Chalmers bracket-bearing synchronous motors in sizes from 30 to 1,000 hp, are described in a 16-page bulletin recently released.

Carbon (637)

National Carbon Co. has published "Advantages of Carbon as a Brush Material," No. 13 in its series of bulletins on brushes and commutation.

Isolators (638)

Electrical Engineers Equipment Co. has issued bulletin 140 on isolators.

Wiring Devices (639)

Slater's catalog 49, recently released, lists more than 100 wiring devices manufactured by that company.

Bi-Monthly Publication (640)

Wagner Electric Corp. has a new publication, "Wagner Industrial Products News," which it is mailing to industrial concerns on a bi-monthly basis. Objective is to circulate news of the company's products.

Commercial Cooking (641)

Associated Products tells of changes and improvements in engineering and design of its Akron Electric line of commercial cooking equipment.

Color and Lighting (642)

Sylvania's "Color is How You Light It" reports the results of a company study on the effect of artificial light on color. The report is based on an analysis by four observers experienced in color work and recognition.

Push-Button Stations (643)

"Push Buttons Unlimited" is the name of a new Cutler-Hammer folder on its line of standard and heavy-duty push-button stations.

Switchgear (644)

Construction features and electrical characteristics of Allis-Chalmers engine-type generators are covered in a 16-page bulletin.

D-C Motor Control (645)

Westinghouse is offering a 23-page booklet on Mot-O-Trol, a packaged electronic, adjustable-speed drive for control of d-c motors operated from a-c sources.

Distribution (646)

A 4-page folder on its LVD Flex-A-Power has been issued by Trumbull Electric Mfg. Co. Installation photos are included.

ELECTRICAL WEST, 68 Post St., San Francisco 4, California
Please send me information about following CIRCLED items:

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STANDARD ENGINEER'S REPORT

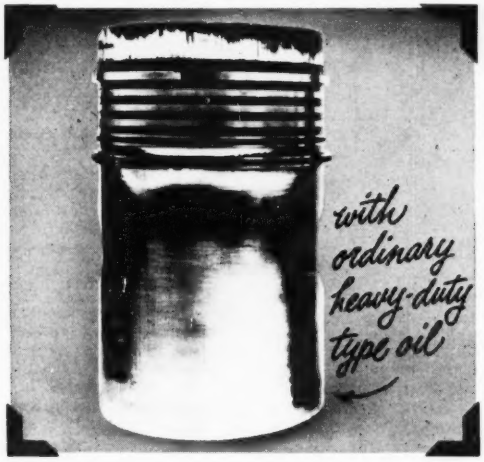
RPM DELO

TEST DATA

LUBRICANT *RPM Delo Supercharged Lubricating Oil*
UNIT *Caterpillar Diesel-D17000-V8 Cyl.*
CONDITIONS *Cont. High load-actual field oper.*
FUEL *Commercially available Diesel Fuel*
TEST PERIOD *4 months.*
FIRM *Homer Jones Ranch, Chandler, Ariz.*

NEW LUBRICATING OIL
STOPS ALL RING STICKING WHERE ORDINARY OIL FAILED

Specially Developed RPM DELO Supercharged Oil Solves Extra Tough Load and Carbon Problems



AFTER ONLY 625 HOURS operation on an ordinary heavy-duty type oil, an engine pulling 90% of full load rating had 39 stuck rings — only 9 of its 48 rings were free and several were broken. There were heavy lacquer and carbon deposits in ring grooves and on piston-skirts, as indicated by this unretouched photograph of one of the pistons. Besides stuck rings, note clogged oil-return holes and oil rings.

OPERATED 1582 HOURS — more than twice as long — on RPM DELO Supercharged Lubricating Oil, the same engine, running under the same load and fuel conditions, stayed efficient and clean, as this unretouched photograph shows. At the end of test all 48 rings were free, there were no piston-skirt deposits, ring-groove deposits were 50% less. Note how RPM DELO Supercharged kept oil-return holes open.

REMARKS: RPM DELO Supercharged Lubricating Oil is a new product added to our line. It solves operating problems in both Diesel and gasoline engines, especially where load conditions are extreme.

Its detergent prevents carbon and lacquer deposits on all parts, even with high sulphur-content fuels.

RPM DELO Supercharged Oil sticks on hot and cold surfaces — reduces wear under the heaviest loads. (Cylinder-wear averaged only 0.0014 inches per 1000 hours with RPM DELO Supercharged, while with the ordinary oil it was 0.0043 inches — three times greater.) RPM DELO Supercharged Lubricating Oil also contains special compounds that resist oxidation and sludging, prevent bearing corrosion and internal rusting, and stop foaming.

STANDARD TECHNICAL SERVICE: checked and reported this test. If you have a lubrication or fuel problem your Standard Fuel and Lubricant Engineer or Representative will give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20.

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ELECTRA'S HUSBAND

"YOUR schoolmate, the governor, doesn't think very well of the power people, does he?" Electra said one night recently as she sat reading the evening paper. "There is a story here which reports him as saying that future electric development in California must be done by public agencies. In his speech he even said that not only is the state short of electricity to attract new industry, but there isn't enough at times to serve present customers."

"If I said what I thought, you would wash my mouth out with soap as you do your nephew's," I said.

"But your nephew learns his profanity from you," she interrupted.

"Let's forget him and get back to the governor." I cut in. "He's playing politics and furthermore he either is getting some poor advice or he just plainly ignores facts. Truth of the matter is . . ."

"Let me give you the whole story before you start your rebuttal." Electra continued. "He says that California has no coal fields and that its oil and gas will only last twenty years.

" 'This means that future hydroelectric energy must be from river basin development,' " she was obviously quoting the newspaper story now. " 'because suitable sites for upstream run-of-the-river hydro systems are practically all developed. On the other hand most potential power is inseparably connected with water conservation for all purposes—irrigation, flood control, navigation, salinity control, municipal purposes, recreation and conservation of wild life. No private utility has either the means, the jurisdiction or the urge to do such a job. No private interest could integrate these functions. Only public agencies, acting in cooperation where jurisdictional lines are transcended, can do such a job. The outstanding example of such cooperation is the construction of Hoover Dam, the cost of which was guaranteed by the city of Los Angeles and other cities and districts.' "

"That's a foul mixture of gobbledegook and double talk." I interjected. "The governor, in his zeal to make his point, has confused political ideology and economics. And that's excusing him lightly. He can't tell his political theories from his economic facts. There are all kinds of ways to win votes, but I abhor the political expediency of half truths and double talk. And when a highly placed public officer ignores sound principles and indulges in specious reasoning, somebody ought to set him straight."

"Who, my dear?" she asked. "You?"

"Lord no," I answered. "That's a job for some person as prominent in the industry as the governor is in politics. Somebody who could tell the governor that Hoover Dam financing included contracts with a couple of good tax-paying power companies as well as the cities and public agencies."

WHY NOT SPEAK OUT AND ANSWER THEM?

"Trouble with the top men in your business is that they let the politicians scare them," Electra commented. "So you might as well forget it."

A couple of days later it was my pleasure to pass Electra a clipping wherein a power company president did set the governor straight. Here is the gist of it:

"First, there is no power shortage in California. Second, the power supply of California is being cared for constantly by the agencies now charged with that responsibility. There need never be a power shortage in California. We are not solely dependent upon further development of hydroelectric power.

"The process of producing electric energy is no secret, and no mystery. It involves simply the turning of a generator by which mechanical energy is turned into electrical energy—and this can be done either by falling water or expanding steam. There is no limit on the amount of power available because fuel supplies are unlimited. Our oil and gas will not be depleted in the foreseeable future but, if they ever are, there still will be 500 or 1,000 years of coal supply in nearby Utah.

"In the absence of a temporary artificial shortage created by such a calamity as the war, there can and always will be a supply of power equal to the demand. It is not true that the government alone can develop hydroelectric power, as is evidenced by the fact that some of the greatest and most costly hydroelectric developments in the world have been made in California by private capital.

"When private capital develops hydroelectric power, it confers all of the benefits which government confers but pays taxes on the value of the development rather than charging the public for the benefits by way of tax exemption and free capital. Our own hydro developments provide flood control, irrigation, conservation of wild life and recreation. The governor seems to understand that only the government can do these things. At the same time the private capital pays taxes on the assessed value of its developments. The private gas and electric companies paid more than $100,000,000 in taxes in California last year.

"I also do not agree with the governor on the idea that power supply alone can create jobs. We had a vast surplus of power supply in the 1930s and had widespread unemployment.

"I agree that power supply is important and I maintain stoutly that we have and will have ample power supply in California for all industry which seeks to locate here. But experience proves that an ample power supply alone will not create jobs.

Electra laid the clipping down and commented:

"Mr. Mullendore speaks right out doesn't he? I retract what I said the other night."

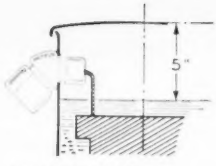
"Well you needn't," I said, picking up a handful of mimeographed sheets and clippings. "Here are a whole batch of speeches by people like Interior Secretary Krug, Assistant Secretary Davidson, Richard Boke, Mike Straus and others which make the governor look like a babe in the woods when it comes to dishing out prejudiced arguments and half-baked theories. Nobody has answered them."

"Why not?" Electra asked. Her question has been echoing in my ears ever since.

NOW...

- *Tank Height Reduced!*
- *Bushing Pockets Eliminated!*
- *Bushing Clamp Simplified!*

OLD DESIGN required more space above oil level because of longer bushing shank.



NEW BUSHING saves up to 3" in tank height . . . eliminates need for bushing pockets.

EXPLODED VIEW shows the simplicity of the new bushing clamping arrangement.

A-2704

. . . on Allis-Chalmers Distribution Transformers

ALLIS-CHALMERS NEW TANK-WALL BUSHING eliminates all need for high voltage bushing pockets . . . enables up to 3" reductions in tank height. This means even greater compactness . . . easier handling distribution transformers than ever before! (Reductions are *in addition* to savings in size and weight through use of highly oriented core steel.)

Installation of the bushing itself is simplified because there are fewer parts, and no critical porcelain tolerances between bushing and keeper. A cushion-like spring on the inner side of the tank wall, between the keeper and bushing absorbs any shock or strain during handling. Increased wall thickness of the bushing, together with straighter, shorter shank contour, increases mechanical strength.

AVAILABLE ON UNITS UP TO 150 KVA

The new design is available on transformers from 3 to 100 kva, single phase, and from 9 to 150 kva, three phase, in voltages up to 4800/8320Y.

For further details on this new bushing, or for other facts on Allis-Chalmers quality distribution transformers, call your nearby A-C sales representative.

ALLIS-CHALMERS, 939A SO. 70 ST.
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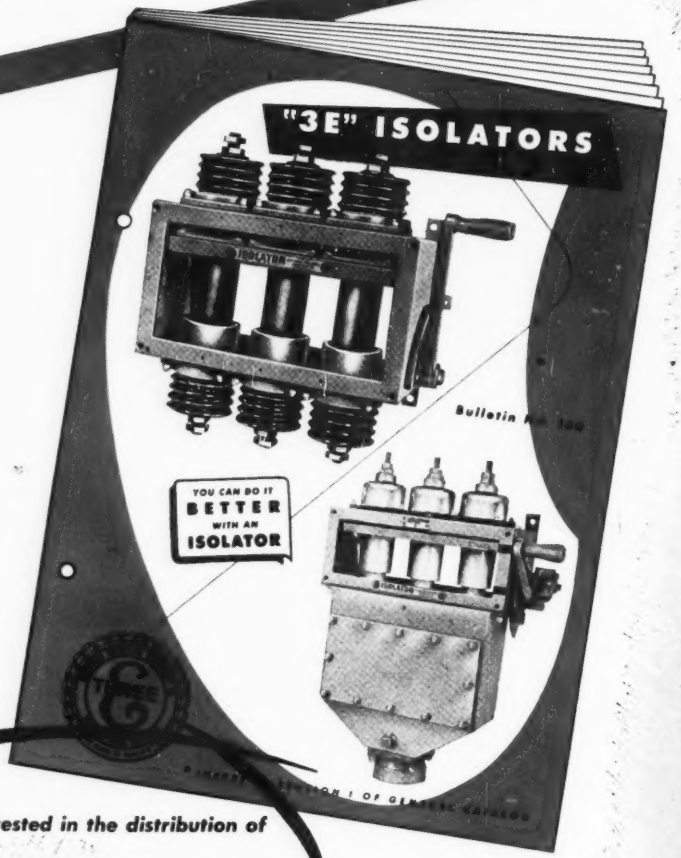
ALLIS-CHALMERS

Pioneers in Power and Electrical Equipment from Generation through Utilization

"Three E's" new Bulletin shows

New Standards in ISOLATORS

Copy FREE on Request



The wide acceptance of the Three E ISOLATOR line by electrical engineers has enabled us to create many new ISOLATOR standards that have increased the usefulness of this device. The first bulletin we issued on the subject of ISOLATORS in 1935 consisted of eight pages with a limited number of listings. As new standards were developed through cooperation with engineers, we have added them to subsequent literature.

We are pleased to announce a new Bulletin 140 on the subject of ISOLATORS and CABLE ISOLATORS. This bulletin contains forty pages of descriptive and dimensional data. A number of new standards, not heretofore available, are shown.

The basic idea behind the preparation of this bulletin has been to list as far as possible equipment for a wide variety of conditions. Furthermore, listings are so designated as to make selections by users as easy as possible.

Every engineer interested in the distribution of electricity at high voltages should have a copy of this bulletin. It will be sent upon request.

THREE E ELECTRICAL ENGINEERS EQUIPMENT CO. MELROSE PARK, ILL. U.S.A. THE MARK OF QUALITY

ELECTRICAL ENGINEERS EQUIPMENT CO.

MELROSE PARK, ILLINOIS

JUNE 1949 Vol. 102, No. 6

ELECTRICAL WEST

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED SECTION OF THE U. S.

FACING UP TO REALITIES

OURS HAS never been a business of "yesterdays." Since its very beginning the electrical industry always has been looking forward to its "tomorrows." Proud of its past accomplishments, certainly; but never content to rest upon its laurels. Its "todays" have ever been the springboard from which to launch the plans for future achievements and service.

This ability always to look and move forward stems from two basic characteristics—courage and a willingness to face realities. There are other necessary qualities to be sure. Without confidence and imagination and energy there can be no accomplishment. But fundamentally it has been the fortitude to look squarely at facts as they are and then plan ahead, which has kept the electrical industry dynamic and ever-expanding.

Seldom before in its annals has the industry stood in greater need of this ability to face up to realities. Today in mid-1949 there is a crying demand for realistic thinking, realistic planning, realistic working and realistic cooperating. The problems that stemmed from the war have been largely solved. In their stead there have arisen some practical realities to test the industry's enterprise and energies. Here are some of them:

American business has returned to something which might be called normal. Along with everyone else the electrical business will have to adjust itself to this new pattern. Such an adjustment should not cause alarm. The new normal represents a volume double or triple that of 1939 or 1940.

Another reality is that customer resistance to high prices has developed over a wide front. It has affected the sale of appliances, the market for wiring, the demand for new homes, and the plans for industrial development. But this is not a new problem. Our industry knows the answer—give the customers what they want and a price which they can afford to pay.

Still another is that the American economy is a competitive economy. Fortunately the time always comes when the buyer gets a choice. That time has arrived. It is a time when salesmanship pays off. And our industry has ever been noted for its ability to sell. The one danger is that the weak and untried will let sales pressures disrupt sound marketing procedures. That would be tragic.

A fourth reality is that high labor costs are here to stay. This calls for the development of the highest possible productivity. Here is a job in which electricity and its tools excel.

A final practical fact, and perhaps the most important one, is that America is headed down the road to Socialism. And the electric light and power industry is close to the head of the list of businesses which the planners would socialize. The industry as a whole must be mobilized and provided with leadership if this tide is to be turned.

The industry has plans for facing up to all of these realities. The pages that follow outline them in detail. They are offered for the record to prove once again that the industry's success and its prosperity are in the hands of the men and women who make this business what it is.

George C. Tenney

EDITOR

A lighting man whose dedication to the cause of better seeing because of better lighting has inspired others (and their combined efforts have made Denver outstanding in street and in school lighting) is president of the Rocky Mountain Electrical League. In his message to the industry, HAROLD T. RANKIN, director of lighting, Public Service Co. of Colorado, touches on many of the jobs lying ahead for the people in the "electrical game" and declares that

THE GAME CALLS FOR TEAMWORK

THIS constantly changing world of ours has moved in the last few months from a seller's market to a shopper's market, and many believe a buyer's market is just around the corner. We all know the storm signals are up, but we know not the severity of the expected storm or the time of arrival. One thing we do know is that it is time to prepare for the future in all phases of the electrical business if this business is to survive according to the precepts set forth by the founders of this great country. This situation demands action by each and every one in the electric business. I suggest a three-step program as necessary: first, *perceive* what has and is taking place; second, *prepare* ourselves for action and third, *perform* in order to protect our investment and to provide properly for those to follow us.

Halt the Trend

We in the electrical industry have seen the sanctity of the individual and his judgment giving way to the power of government over a considerable period of time. Other industries and professions are beginning to experience these things in their own lines of endeavor. It is time to call a halt to this trend. Let us see how the national picture is changing for all business.

Our government's proposed budget for 1949 of approximately $42 billion is more than the total national income in 1932. It is estimated about 75% of this budget will be used for national defense, foreign aid and to pay for the cost of past wars. The remaining 25% is the real threat to our future.

In 1944 we in the United States had approximately $34 billion left after taxes as work dollars, but in 1947 with the highest national income in history we had less than nine billion *work* dollars available. When is this trend going to stop?

Bank deposits are still reported as good, wages are still up and employment in most areas seems satisfactory, but credit is beginning to tighten up, material and manpower shortages have in a large measure disappeared, and manufactured items are no longer short but are beginning to pile up as indicated by distress merchandise sales. Buyers are beginning to shop for items they want. The leveling off process is under way. All these things are a challenge to the electrical industry. We must, therefore, prepare ourselves and our industry for that which is ahead.

New Sales Technique Needed

Our sales technique must change to fit the changing conditions. Basic selling ideas should be reviewed and thoroughly learned. It has been stated many times that, when two people meet and hold a conversation, a sale results either of product or thought. It is time we trained our newer employees in the basic ideas, in order that they will make the sale rather than be sold. Many employees have not gone through the ordeal of a depression such as older employees have experienced. These men, in general, have been order takers and now must be taught to sell against stiff competition in both product and thought.

During the war many new manufacturers, distributors, retailers, etc., entered the electrical field. Many of these have proved themselves and will remain in business. Others have or will close up shop because of the inability to carry on in a competitive field. Business in general has backed up because prices were considered too high, quality was in many cases poor and fast or easy money was pulled off. Distress merchandise has caused a feeling of buying on a declining market. Utilities have more and more been legislated out of portions of their business, and indications point to complete government ownership and operation unless we sell our methods, ourselves, our products and our companies to the public. Our heads should not be hidden in the sand until the storm blows over.

A demand has been created for our

C. Mel Pearson was one of the speakers at the RMEL Spring Conference in Cheyenne. He advised the selling of present values; warned against price cutting

product in every phase of the electrical business through smart selling. Many so-called luxuries in the electric line have become necessities because salesmen have made them so. Now, however, competition is increasing materially, and it will take smart, aggressive and intelligent salesmanship to keep our industry in the position it deserves.

Many millions have been spent each year nationally to sell our industry and products to the public. Dealers have spent thousands to bring the customers to our doors. Individually it is our responsibility to get that customer inside the door and make the sale. We must have properly trained personnel, more newspaper and radio advertising, and better displays. It is time we realized that the customer is our boss, and he wants some say in how we run our business. It is necessary, therefore, that we have fair and honest customer relations. We all must admit we do not work as hard as we used to because we have not had to, but if this business is to survive, we must band together and get back to the hard work of yesterday. It often has been said, "What is everybody's business is no one's business." We must lock the barn door before the horse is stolen. Associations have been formed within the electrical field, made up of representatives of manufacturers, distributors, dealers, contractors, utilities, etc., and they have accomplished many worthwhile things; but the tendency is for each to promote his own thoughts or product with little effort expended toward promoting the industry as a whole. My plea is that it is time to expand our views and individually and collectively promote the electrical industry as a proven and satisfactory business following the principles of free enterprise.

If each one takes his full share of responsibility, this industry can and will be kept in the correct path without veering into ruts at the side of the road that might slow down or stop the progress of a free enterprise industry. An institution is measured by the length of shadow of management. Let us increase, not decrease, this length.

A merchandiser and an appliance distributor is speaking to the entire industry when M. G. SUES, Sues, Young & Brown and president of Pacific Coast Electrical Association, addresses this Convention-in-Print. It is unusual for a man in his position to head such an association, but it is timely too, for there is foresight and wisdom in his admonition that the entire industry needs to turn from construction to selling, to bring back the activities of the 30's, or, as he phrases it,

LET'S GET BACK INTO HARNESS

LAST year at the close of that great convention in San Francisco I had the opportunity to make a few remarks. What I had to say sounded, I believe, like extraneous noises in what otherwise would have been a very orderly and worthwhile convention. You will recall that at that time we were all really hitting the jack pot. Utilities didn't have nearly enough power to satisfy the demand. This constituted a real problem to them. Appliance manufacturers, distributors and dealers couldn't begin to satisfy the public's requirements for refrigerators, ranges, washing machines and such. Radio was catching up but did not constitute a real selling problem. Wiring supplies were practically unprocurable in sufficient quantities, and electrical contractors had more business than they could possibly take care of for months to come.

It was under those circumstances that I chose to talk about the need for supplying radio and appliance dealers with cooperation, support, education and campaign help. It was with the thought in mind that there were enough signs on the horizon to indicate that conditions were due for a change, and the realization that the appliance dealers—a large percentage of them war babies—were totally unprepared to do much more than to take orders to satisfy an unprecedented demand.

The time to get ready, and the time to prepare, is prior to the time the need is evident. I am afraid that all most of us did was talk about it, because when the need for selling ability and merchandising effort became realistically apparent, a large majority of those of us engaged in the selling phase of this industry were caught completely flat-footed.

Now there is no question about the need. Warehouses all over the country, and particularly in California, are bulging with refrigerators, electric ranges, washing machines—and even some of them with television sets. Electrical contractors are actually back in the business of bidding for jobs. Supply wholesalers have come to the realization that all of the old competitive practices are back with them again, and the economic report put out by the Security-First National Bank recently, indicates that there was actually a decline in power consumption in the Los Angeles area during the past sixty days.

Even our group of hindsight armchair economic quarterbacks—the so-called government experts—have belatedly become aware of the fact that conditions today call for less government spending and less taxes, rather than more government spending and more taxes—Harry Truman notwithstanding.

It all adds up to the idea that our electrical industry must get back into the harness, and must reinstitute and re-establish the type of cooperative merchandising activity which made the electrical industry progressive and successful during the 30's when the balance of industry was suffering a depression. This, I believe, is something that we have forgotten: the merchandising campaigns, the stimulating programs, the contests, the cooking schools and the demonstrations that were con-

ducted. The plus interest and the plus volume that were created made the difference between a very ordinary business and a very successful business.

Today it is needed again. Today the radio and appliance dealer—who is the key to the entire situation—who is the fellow that makes our industry tick through his selling effort—needs re-education, restimulation, selling campaigns as a merchandising vehicle, and every possible help that can be given him.

It is no longer a question whether it should be done. It is apparent that it must be done, unless we are content to allow the automobile industry, the furniture industry, or some other industry to take consumer dollars that belong to us.

Last year the need for this effort was not immediately apparent. This year the need is definite. I am sure that the new administration will include merchandising activity as an important part of its program, and I urge all of you to give this phase of association activity your full cooperation and your full support during the coming months.

Powerful weapons on the side of private enterprise are fostered and nurtured by our association. In those who work in our sections and our committees is our strength. We have faith that the right way will win the right-of-way. An enlightened public and efficient service at low cost make up our defenses. Together we can win. We are not afraid to face realities. W. L. THRAILKILL, president of the Northwest Electric Light and Power Association, says here that the

N. W. HAS A BIG JOB AHEAD

IN the Pacific Northwest, the electric utility industry has been experiencing phenomenal growth in the last ten years, and indications point to little change in the trend. Electricity is cheap. Potential resources are abundant. Scenery is exquisite. Yes—opportunity is here. People all over the country have learned of the possibilities in the Pacific Northwest. Those who visited here during the war years are our best missionaries.

What does it mean to us? Problems! But not insurmountable problems. The Northwest Electric Light & Power Assn., banding together the privately owned and operated electric utilities in the Northwest, the manufacturers, distributors and dealers in electrical equipment and appliances, and the electrical contractors, has a key position in this development.

Ideas Interchanged

Our association furnishes a medium for the interchange of ideas, for research, and for coordinated planning so much needed in our era of unequaled expansion. Our companies must rely on each other as never before in our history. Our heralded Northwest Power Pool is proof of this, conceived and inaugurated as it was by our privately operated utilities, but now expanded and carried on by the cooperative endeavor of private and public agencies alike.

A large proportion of the potential hydro power of the North American continent is here in the Northwest. Many years back, we recognized that electricity was destined to become a great factor in the development of our part of the country. To increase its development and utilization, we engaged in cooperative research to prove the economic practicality of the electric range and electric water heater. We are now engaged in extensive practical applied research in the field of electric heating for the home, the office and the factory. We have pioneered in establishing low rates for the development of these services, while in other parts of the world utilities have watched our adventures with skepticism and amazement.

Where Do We Stand?

Where do we stand today? We are working diligently to provide for the expansion that our efforts have brought to reality. Our companies are engaged in expanding at the rate of nearly $50 million per year for generation and transmission facilities which will in a three-year period add nearly 700,000 kw. of new capacity. This is in addition to the huge program of development on the Columbia River by the federal government. We are spending an equal amount annually (nearly $50 million) to expand and improve our distribution and general facilities to serve adequately the requirements of our new customers and the increased use by existing customers.

The private utility members of this association serve approximately 1,500,000 customers for a gross annual revenue of $176,000,000. Our residential customers on the average use more than twice as much electricity as the average over the country, partly because our rates are low, and partly because we have pioneered the all-electric home and have otherwise diligently sold a wide economic use of electricity for all purposes.

Tax Bill High

Our utility companies together here in the Northwest pay an annual tax bill of $35 million for the support of our federal, state, and local governments. Compare this, if you like, with the net revenue the federal government claims of $9 million from its great power developments on the Columbia.

Yes, our private utilities are a vital factor in the Northwest. But we are of greater benefit to the development of the Northwest than is generally realized. We, through this association and individually, are assuming the responsibility of furthering the promotion of the entire private enterprise system engaged in serving the electrical needs of the public. Associated with us and our 13,000 employees in this great undertaking are 155 electrical equipment

manufacturer representatives having 2,500 employees; 376 electrical equipment wholesalers with 7,500 employees, and 4,670 electrical equipment dealers employing 24,000 people. Also there are 1,920 electrical contractors engaged in the wiring and installation of electrical facilities, employing 10,000 persons. All of these together make a grand total of 7,120 firms looking to us for leadership and help, and combined with our employees this means that 57,000 persons are employed by and are dependent on this vast private enterprise, the electrical industry of the Pacific Northwest.

When one looks at the whole picture, the dollar volume of business is also of interest. Besides approximately $100 million of new construction by our companies and the $176 million for power sold, the retail electrical appliance sales amount to $140 million. A total gross business of more than $400 million, not including a large unknown amount of business done by the electrical contractors in industrial, commercial and home wiring.

Appliance Potential

Something of the magnitude of the joint appliance sales promotion job ahead can be realized when the tremendous appliance market is divided into "prospective" purchasers, who are pre-sold and expect to buy now, and "potential" purchasers, whose business can be acquired only through sound and continuous sales promotion.

The electric range market provides a striking example. In the five states served by utility members of this association, there are probably 160,000 ranges which have been in use more than ten years and which now, or soon will, need replacing. It is estimated that an additional 340,000 families receiving electric service do not now own electric ranges. The total of these two figures equal 1,000,000 potential range buyers — the theoretical limit of today's market.

In a market survey conducted in a selected area last year, it was found that approximately 3% of all electric range owners were making definite plans to replace their ranges and about 16% of the non-owners had made up their minds to buy electric ranges for the first time. These percentages, applied to the number of present owners and non-owners in the five states, indicate a pre-sold market of about 150,000. These are "prospective" purchasers.

The refrigerator market provides another example. It is estimated that approximately 260,000 refrigerators in the five states are more than ten years old. About an equal number of electrical customers do not own refrigerators. Thus the theoretical market limit is 520,000. From the selected area survey made last year, 4% of the present owners intended to replace their refrigerators soon and 34% of the non-owners intended to buy. Accordingly, the pre-sold market in the five states can be placed at about 130,000.

It is in the huge area between the 150,000 "prospective" range buyers and the 1,000,000 "potential" buyers—between the 130,000 "prospective" refrigerator buyers and the 520,000 "potential" buyers — that aggressive and continuous sales promotion can play a decisive role. This is the market that can be cultivated and exploited to the fullest to bring more and more electrical service to more and more people—or it is the market that can be neglected and forgotten.

It is a difficult market to reach—for it is not sold on the merits of all-electric living. It is a market whose development required long-range programming and consistent promotion.

Only utilities can furnish the leadership necessary for the long-range development of such a market in their territories. The dealers alone, without leadership and assistance, can do no more than work on the market of immediate returns — the "prospective," pre-sold buyer. The much larger, "potential" market will surely be neglected unless utilities work with manufacturers, distributors and dealers aggressively and consistently in unified promotional effort.

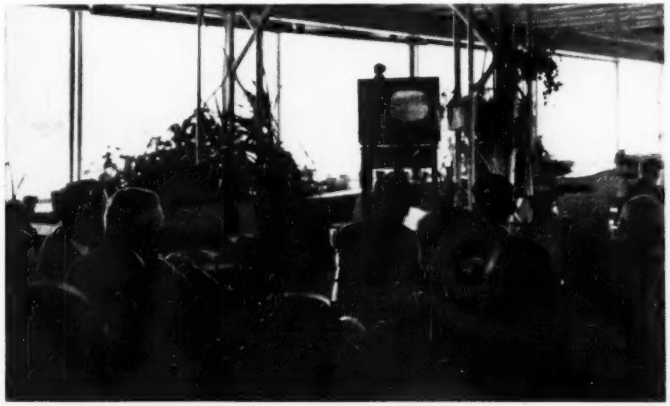
Let's Face Realities

One thrills in the thought of being associated in such a great industry, but we cannot be complacent and contented about the future. We must face reality in its entirety. Ours is the arena for the present in the combat between those who would socialize this great industry and those who believe that we as private enterprise must here prevail at all costs, if our national freedom, our constitutional heritage, is to be preserved. There are many, and the number is growing, who feel that the electric utility industry is in the front-line trenches of a socialistic warfare, in which discriminatory taxation and subsidized competition are employed as weapons against us.

However, there are many weapons on our side. First and foremost, private enterprise is right. It is fundamental to our national economy. It was recognized and purposely safeguarded by our forefathers in the drawing up of our Federal Constitution. We know that only private enterprise can make for maximum economy, efficiency, invention and abundance, and these in themselves to a great extent offset taxation and subsidization. Furthermore, initiative in selling is found only in private enterprise. Selling means promotion with expansion and progress in its wake.

These factors, powerful weapons on the side of private enterprise, are fostered and nurtured by our association, by our working together in our sections and our committees. In them is our strength. We have the faith that the right way will win the right of way. An enlightened public and rendition of better service, an efficient service at low cost, make up our defense. We have much to do but together we can win. We are not afraid to face reality.

Utah Power & Light showed its television program to members of the Northwest Electric Light & Power Assn. at the Business Development Section meeting in Salt Lake City last month. First utility in the West to originate programs of this kind, the company puts on live demonstrations on the uses of electricity



Existing procedure provides full coordination between competent federal agencies now engaged in adequate programs for resource development under sound federal policy. People should be wary of subjecting themselves to an authority totally lacking in any of the restraints that a democracy should erect against the agencies of government. GENERAL THOMAS M. ROBINS, consulting engineer of Portland—builder of Bonneville Dam—tells emphatically

WHY A CVA IS NOT NEEDED

NO real need exists for establishment of any more valley authorities in this country. Existing laws and procedure provide for full coordination between the competent federal agencies now engaged in adequate programs for development of our natural resources under a sound federal policy, laid down by Congress, which protects the rights of the states and those of local interests. Most serious consideration should be given by all the people of any region to the consequences before giving up the protection of their rights afforded by existing law and subjecting themselves to an authority unencumbered by any of the restraints that a democracy should erect against agencies of government.

Certainly should the people of the Pacific Northwest be wary of the renewed proposals now being made to bring this region under valley authority rule. The pending legislation framed and introduced at President Truman's request for a Columbia Valley Authority should be closely examined, and its desirability weighed in the light of the progress in resource development and conservation now being made under existing national laws which provide for democratic methods of planning and executing a fully adequate program for the Columbia River basin.

Development of Natural Resources

Those ideologists who want to have established throughout the entire United States a number of regional authorities similar to TVA are spreading propaganda to the effect that little or no progress has been made in the development of our natural resources except in the Tennessee Valley and that nothing would have been done in the Tennessee Valley if the TVA had not been created. This propaganda, like most of the statements made by false prophets preaching the doctrine of getting something for nothing, has no regard for the truth.

The facts are that not only have great strides been made in nation-wide development of our natural resources but a sound, orderly method for the continuation of such development by the federal government has been evolved and laid down *by Congress and is being carried out effectively and efficiently*.

Congress Recognizes Needs

From the beginning, Congress has recognized the importance of conservation and development of natural resources and from time to time has made laws and appropriations to meet the ever-changing national needs of social and economic growth. The necessary improvements for navigation and flood control have been authorized and directed by Congress in a succession of laws known as River and Harbor Acts and Flood Control Acts. Developments for irrigation have been provided by passage of a series of laws known as Reclamation Acts.

A number of other laws governing the activities of the Department of Agriculture and the Department of Interior authorize and direct the necessary steps to be taken for preservation of our forests, prevention of soil erosion, preservation of fish and wild life, promoting development of mineral resources, and making recreation facilities available to the public.

Upon the development of high-tension transmission enabling the widespread use of electric energy, Congress in 1920 passed the Federal Water Power Act creating the Federal Power Commission to regulate the production and sale of hydroelectric power. There has been consistent legislation to insure widespread use of cheap electric energy including the Boulder Canyon Act of 1928, the Rural Electrification Act of 1936, the Bonneville Act of

Hungry Horse Dam project, now under construction in Montana, is one great federal development being carried out by a competent governmental agency—the U. S. Bureau of Reclamation. Existing procedure got this project under way

1937, the Flood Control Act of 1938, the Reclamation Act of 1939, the Flood Control Act of 1944, and the River and Harbor Act of 1945.

Comprehensive Development Assured

From experience gained in administering the Federal Water Power Act, it became apparent that in order to insure full conservation of our water resources we could no longer afford to build dams, or other works of stream improvement, without considering all the uses that could be made of the site and the interrelationship between works of improvement on the several parts of a large river system. In other words, the time had come in the growth of the nation to plan for basin-wide development. Accordingly, Congress in 1925 directed the Federal Power Commission and the Corps of Engineers to prepare and submit a joint report outlining a program for investigations and surveys of all our important river systems with a view to determining the best plan for their improvement as a whole in the combined interest of navigation, flood control, irrigation, production of hydro-electric power and other beneficial uses of water.

The joint report was submitted and printed in House Document No. 308, Sixty-ninth Congress, 1st Session. The investigations and surveys recommended in House Document No. 308, Sixty-ninth Congress were authorized in the River and Harbor Act of 1927, completed in due course, and reports thereon for each river system submitted to Congress. These reports are commonly known as "308 Reports" and the plans for basin-wide development therein form the framework for the large number of water conservation projects since authorized by Congress, including the dams and power plants of the TVA and, among others, the Grand Coulee, Fort Peck and Bonneville dams and power plants.

Realizing the great value of the studies and investigations undertaken in accordance with House Document No. 308, Congress in the River and Harbor Act of 1935 made provision for their continuation by the Corps of Engineers as long as it may be necessary to take into account important changes in economic factors as they occur, and additional stream flow records, or other factual data.

Federal Reclamation of Long Standing

The reclamation of arid lands in the United States became a matter of national concern when settlement of the West had progressed to such a point that there was left available few sources of water supply for irrigation which were economically feasible of development by privately financed irrigation districts. To meet this situation the Reclamation Act of 1902, creating the Bureau of Reclamation, and authorizing federal financing of irrigation projects under a repayment plan without interest, was passed by Congress. Under this act, and subsequent Reclamation Act of 1906, 1939, and 1941, the Bureau of Reclamation has been continuously engaged in the conservation of water in all the river basins lying west of the ninety-eighth meridian.

Flood Control Is a National Problem

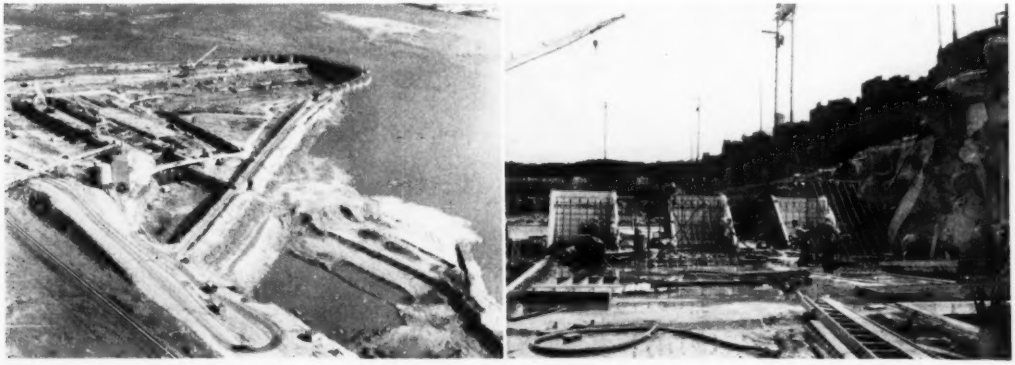
In many of our river basins flood control has always been a need, growing more acute as population increased and industry expanded. Except in special cases, such as the lower Mississippi River and the Sacramento River, it was the national policy for many years to regard flood control as a local problem and, in general, local interests were expected to cope with it. After a series of disastrous floods, Congress in 1936 declared that flood control was a matter of national concern and authorized federal projects for flood control in all the major river basins of the country based on the comprehensive plans contained in the "308 Reports." Investigations and improvements of rivers and other waterways for flood control were placed under jurisdiction of the War Department.

Investigations and improvements of watersheds, measures for run-off retardation, and soil erosion prevention were placed under the jurisdiction of the Department of Agriculture. Since 1936 Congress has passed four general flood control acts authorizing, by river basin, additional expenditures and additional projects for both waterways and watersheds in accordance with comprehensive plans and the principle of multiple-purpose development including production of hydro-electric power wherever feasible. The last general Flood Control Act, approved Dec. 22, 1944, is particularly important since it makes clear-cut provisions for protection of state rights and coordination of all federal agencies in the planning and operation of federal multiple-purpose projects.

Although in the early stages of development projects were considered more or less individually, they are now undertaken only in accordance with the principle of multiple use and comprehensive basin-wide plans. Multiple use includes power development, domestic water supply, flood control, recreation and improvement for navigation. There is no duplication of effort in the work of the Bureau of Reclamation and the Corps of Engineers.

Engineering and economic data secured through the investigations and surveys of one of these agencies are by law made available to the other. The

Recent views of McNary development on the Columbia show early stages in construction of dam and power plant. This U. S. Army Engineers project authorized by Congress is under way without aid of a super governmental agency



No Valley Authority was needed to build the great Grand Coulee Dam and power plant—a Bureau of Reclamation power, irrigation and flood control project. Ten 108,000-kw. generators are operating. Two more go into service this year

law also requires coordination of basin-wide plans prepared by these agencies prior to submission to Congress.

Sound Existing Federal Policy

The laws having to do with the development of our natural resources that have been passed by Congress over a period of years are not inconsistent and, taken all together, they establish a very definite, adequate and sound federal policy under which: (a) the agencies involved are responsible to Congress; (b) comprehensive and coordinated development and operation is mandatory; (c) rights of the states and interests of the people are recognized and protected, and (d) all projects must be economically justified and approved by Congress before they are undertaken.

The federal agencies charged by Congress with carrying out the laws have *proved their ability and reliability*. In the Interior Department may be mentioned the Bureau of Reclamation, the Geological Survey, the National Park Service, the Indian Service, the Bureau of Mines, the Fish and Wild Life Service, the Grazing Service, and the Bonneville Power Administration.

Those agencies in the Department of Agriculture include the Forest Service, Soil Conservation Service, and the Rural Electrification Administration. Civil Works entrusted to the War Department are carried out by the Corps of Engineers, U. S. Army. The Federal Power Commission has for a quarter of a century ably protected the public interest in the development of hydroelectric power.

Under existing law, the possibilities for development of hydroelectric power must be fully considered and exploited. Provision is made for domestic water supply from federal multiple-purpose projects, whenever feasible, and for recreation facilities in the reservoir areas for public use free of charge. Irrigation storage at War Department projects is operated under control of the Bureau of Reclamation, and water for irrigation from this storage is distributed by the Interior Department in accordance with the Reclamation Acts. Storage in any reservoir allocated to navigation or flood control is operated under regulations drawn up by the War Department.

The Interior Department is charged with the transmission and sale of hydroelectric energy produced at federal projects. The law provides that this must be done so as to bring about widespread use at the lowest possible cost consistent with sound business principles. Receipts from sale of power must be deposited into the U. S. Treasury. Preference in the sale of power must be given to public bodies but there is nothing in the law that prohibits the sale of power to private companies if it is not needed by public bodies.

State Rights Respected

In the Flood Control Act approved Dec. 22, 1944, it is declared "to be the policy of Congress to recognize the interests and rights of the states in determining the development of watersheds within their borders and likewise their interests and rights in water utilization and control."

The use of water for navigation "shall be only such as does not conflict with any beneficial consumptive use, present or future, in states lying wholly or partly west of the ninety-eighth meridian, of such water for domestic, municipal, stock water, irrigation, mining, or industrial purposes."

The Bureau of Reclamation and the Corps of Engineers, in making surveys and investigations of our river basins, must keep state agencies and local interests advised as to the scope and progress of the work and as to the plans of development that are being considered. Prior to submission of any report to Congress by the Secretary of the Interior or the Secretary of War it must be referred to the governors of the affected state or states for their views and recommendations thereon. The views and recommendations of the governors must accompany the reports when sent to Congress. Thus the people, through their state officials and their representatives in Congress, can appeal from any decision of the federal agencies involved in water conservation.

Under the democratic procedure outlined above, agencies of the Departments of Interior, Agriculture and War have formulated comprehensive, coordinated, basic plans for development of river basins throughout the nation in accordance with which Congress has authorized construction of projects estimated to cost in the aggregate upwards of $8,000,000,000.

Under the same democratic procedure these agencies have expanded and perfected these basic plans so that ultimately full conservation of every natural resource in every river basin will be secured in the way the people want it done. To insure coordination and full consideration of every interest involved, the Interior Department, the War Department, the Department of Agriculture and the Federal Power Commission have voluntarily established in Washington a Federal Inter-Agency River Basin Committee, on which each has representation, to review all plans proposed for the conservation of natural resources prior to submission to Congress.

To insure participation of states and local interests in planning, there have been established in the field a Missouri Basin Inter-Agency Committee and a *Columbia Basin Inter-Agency Committee* on which the governors of the affected states are represented. It is the function of these field committees to keep all federal agencies in the field and state agencies advised in regard to investigations and surveys in progress, and to review and coordinate proposed plans for development prior to their transmission to Washington for department approval.

There is no cogent reason for the people to be dissatisfied with the progress being made in the development of our natural resources. This is par-

ticularly true in the Pacific Northwest where the federal multiple-purpose projects already built and under construction are outstanding. Projects in the Pacific Northwest completed and administered under agencies of the Interior Department furnish water for more than a million acres of land and have facilities for production of hydroelectric energy with a total capacity upwards of 1,500,000 kw.

In this same region projects completed and administered by the Corps of Engineers have an installed capacity of more than 500,000 kw. for production of hydroelectric power, protect property valued at more than $200,000,000 from floods, and make possible the use of more than 600 miles of the rivers for cheap water transportation. On account of these federal multiple-purpose projects, the *Pacific Northwest today enjoys a more widespread use of cheap electric energy than any other region of the United States.*

Under existing policy it will continue to do so because construction programs of the Bureau of Reclamation and the Corps of Engineers, authorized by Congress and under way, will together *provide an additional installed capacity of 2,800,000 kw.* Completion of these programs also will bring 1,500,000 more acres of land under water, afford protection from floods for 650,000 acres of land now only partly protected, and bring about through commercial low-cost barge traffic between Snake River points and the sea.

Why, in view of the facts presented herein, is a Columbia Valley Authority needed, or even contemplated? What could a Valley Authority accomplish that is not now being carried out in an orderly and economical fashion by presently functioning agencies under American democratic processes? Why is a super-overriding governmental agency needed that would usurp states' rights and create a socialistic federal state? A little competition, even in government, may be a good thing. Certainly present rivalry between the several governmental agencies now having to do with federal development of river basins has proved a check and double check system that has protected the taxpayers of the nation against grandiose schemes. Let's not disturb the present machinery. Let's leave well enough alone.

No punch puller, KIMBALL JACK has a way of looking right through the surface to the works, and of talking plainly about what he sees. As advertising, publicity and personnel man for Washington Water Power Co., which itself is in the combat zone of Socialism, he has had ample observation of the crime against freedom that is in process there. As a student of human nature, he knows what it will take from all business and all the partners of business to stop the

MURDER ABOUT TO BE COMMITTED

A PROMINENT industrial leader residing on the Pacific Coast stated recently that he is now quite willing to assemble his employees on company time and permit a spokesman for private enterprise to present its splendid story of achievement. Hardly is it necessary to point out that, until the proposed meeting is held, this great firm during its thirty long prosperous years has never bothered to inform employees regarding the advantages of living in a capitalistic society.

That is the general status of public relations activity in the field of American business.

America today disintegrates under the cold neglect of some 3,300,000 business firms, all managed by men of leadership and experience, a large percentage possessing not one, but numerous keen minds and buoyant wills. Therefore, it amazes some of us that encroaching statism is shrugged aside, that intelligent business leaders, who evidently think more of the mechanical means toward a public service than the end itself, will dismiss, without doing too much about it, the movement which proposes to wipe them from the face of the earth. It is *complacence*, not misdemeanors, which may some day be pointed to as the downfall of capitalism. Americans just don't give a damn.

Murder of Free Enterprise

Our gloomy prospect of state socialism unfolding about us, swallowing first the electric industry, eyeing with malevolence our mines, lumber, insurance and other equally productive enterprises, possesses all the elements of a Western thriller. Sit back, Old Timer, and relax. Get out your chewing tobacco and reach for the coal scuttle, most indifferent man, before the plot thickens to include you. A half-opened eye will reveal plenty of trouble ahead. You'll wish you had a public relations program. Indeed, it is a swell night for a murder.

Already at the far end of town, with ladder propped against the side of the house, a determined group of citizens is climbing through the bedroom window. Look inside where Mr. Private Utility reposes. He is the grandchild of free enterprise, a chip off the old block. What we witness instanter will appear in tomorrow's history book. It is the murder of private enterprise.

Leaders in the assassination, whose hands and feet already reach over the window sill, wave red banners indicating membership in the socialist party. Since 1914 they have openly boasted that Mr. Private Utility, like Caesar, is an enemy to the state and must be liquidated.

"Our long-time aim is the abolition of the profit system for private use," they cry. "Capitalism has served its time and is passing from the earth. A new system must be found to take its place . . . We will tax and tax; spend and spend; elect and elect; . . . our opponents call it socialism and communism. We are not the least worried."

Said Hitler: "The era of personal happiness is closed." Said Harry Hopkins: "People are too dumb to understand."

Climbing up the ladder, pressing in for the kill are numerous government bureaus, all sniffing the prospects of unearned booty. A few hecklers blandly admit that they enjoy rape. Other bureaus which spread their roots like wild morning glory on a Western wheat farm are impelled only by the desire to grow. One thing most of them have in common—the murder of private enterprise.

On the ground below, numerous civilians have followed along, agreeing that, once Mr. Private Utility is disposed of, his riches will be tossed from the balcony to the crowd. This is the general belief of the multitude, and the first major problem of public education. It is what Marxian economists pleasantly refer to as "sharing the wealth," a most worthy deviation wherein the nation's poor are suddenly made equal, capable and rich.

Indifference and Complacence

Up and down the avenues the butcher, the baker and the candlestick maker, thousands of citizens—shrewd lawyers, busy doctors, respectable ministers, freedom-loving educators—stretch securely in their own beds, pleased that the mob is out to liquidate the other fellow, rather than one of their own numbers. Public relations is bogged down with indifference.

"We can read about it tomorrow," they murmur. "After all, what will it matter after a thousand years? Is it not true that the great man from Missouri, elected to preserve law and the constitution, seems to want it this way? Do his henchmen not say that violent deeds against private enterprise will transform our backward, destitute America into a worker's republic?"

A Western thriller indeed!

Justifiable homicide judged in advance!

Private enterprise murdered in its own bed!

So this plausible obituary to Mr. Private Utility should have Mr. Business Man asking where are the nitwits who tolerate it? The answer is, everywhere. Who is willing to complain? Nobody.

At this point, however, while Mr. Private Utility still breathes and mutters in his sleep, cold logic demands the answer to several inconsistencies. Experience, too, must be reconciled before the hand plunges down, and constitutional America lives no more.

For example, were death of Mr. Private Utility an orderly process, we might hear testimony of the widow and the kids—all those millions of investors, employees and customers. A big majority insist that Mr. Private Utility is not a bad sort of guy. They say he shows habits of industry, is a good provider. So near and distant relatives draw the remarkable conclusion that any praiseworthy contribution to the nation's wealth at the hands of a live worker is more than can be expected after he is dead. Then why kill the breadwinner?

If it's proof a body wants, state evidence can be found.

Victim Was a Good Provider

Here, since the earliest dawn of history, humanity has died of hunger, shivered with cold, gone to an early grave under physical hardships. Then, as every business man knows (but guards as a deep business secret) America, with only seven per cent of the world's population, now lives in a fabulous atmosphere of wealth. Our 140 million people produce more than the 600 million in Europe, our production per capita is over four times as great. The nation possesses 85% of the world's automobiles; 60% of its life insurance; 92% of its modern telephones; consumes 75% of the world's silk and 60% of rubber.

Mr. Private Utility, contributing a full share, may take credit for nearly half of the world's electricity—nearly six times as much as can be found in Russia, that mirage into which reformers would lure us. Electricity, an ever increasingly useful servant, is enjoyed by 130 million Americans, with 95% of all occupied homes having electric power available, and 82% of occupied farms within easy access to power lines.

American families purchase cheap labor-saving appliances in staggering numbers: 31,000,000 irons; 27,000,000 electric clocks; 23,000,000 refrigerators; 20,000,000 electric washers; 37,000,000 radios and *ad infinitum*. Private enterprise produced them all.

An astronomical figure of 152 billion kilowatt-hours was used in 1947 in American industry, with an average annual contribution per worker amounting to 10,535 kwh. This means that each manufacturing worker has the equivalent of 157 men working with him on the job all year long. The $55,000 investment per wage earner has given job security to more than a quarter of a million employees, while 3,000,000 laborers, widows, teachers and businessmen have relied upon direct investments for some means of support.

What can proponents of the new socialist state add to this impressive accomplishment? Swiftly, in less than one hundred years, our business system has transformed sickness and pestilence into lengthened life span and better health. It has moved from darkness to light; from tedious travel by stage coach to air travel and streamlined trains; from poverty of mind to nearly 19,000 newspapers and magazines, not to mention radios, all expounding without cost to the recipient music, debate and drama; from the discomfort of coal stoves and bare floors to the rich enjoyment of a modern home; from back-breaking drudgery to the nuclear physicist ready to carry on.

How About Uncle Percival?

Again, before the blade plunges and Mr. Private Utility is laid to rest, good judgment suggests that we write Uncle Percival in England to inquire of him how they made out after the breadwinner passed on. The report is not so good.

In England today, under a special brand of Socialism, rationing still exists. British coal mines lose $92,000,000 in a single year, with production constantly down. The improvement of morale among the workers, which was predicted by socialist promoters prior to the time industries were nationalized, never came. Morale has sunk to a new low. The privacy of any man's home may be arbitrarily entered by some 17 different inspectors. Tactical disadvantages inseparable from large-scale, bureaucratic, monopolistic operations are apparent everywhere. The poor are still poor, if not even more destitute. State socialism in England has not boosted living standards of the workers to a level enjoyed by the ruling class. It never will.

And Cousin Vladimar?

Russia's situation, says Cousin Vladimar, is even worse. The "Russian dream" shows what can be expected when statism reaches its ultimate destiny in England, or in America. Because the moment the state acquires ownership of the productive property of the nation, its government becomes independent of the will of the people. That marks the end of civil, political and human liberties.

In Russia, a way of life born of regimentation, hardship and toil—the worst in economic purgatories—has resulted in the complete loss of personal freedom. The state decides what the individual should read, what radio programs he will listen to, what parts of science he may believe, his method of amusement, the place he must work, his attitude toward religion. The iron-cruel collection of all surplus from the individual, meagre food apportionments, the ever-watchful eye of the po-

lice — these await any nation that sleeps away its liberty. Yet again, we must remind the reader that it is doubtful if 500 business firms out of the 3.8 million ever explain these truths to the worker.

But, argue staunch defenders of a new social order in America, look at the TVA which proves that Utopia can exist under government control if properly handled.

The TVA accomplishment is largely fictional, and any admirer is warned not to look this gift horse in the mouth. Built at a cost of more than 760 millions of good tax money, boosted to a billion invested, fed annually with appropriations, it has after 13 years only succeeded in electrifying 40% of its farms against 98% in the Northwest. Tennessee stands fourth from the bottom of the nation's 48 states in farm electrification. Per capita income in TVA land, too, has been overrated. Having attained only 60% of the national average income, Tennessee can well cast a sheep's eye at the Northwest which, without the help of TVA, has the highest per capita income in the nation. TVA electric rates, relieved of federal taxes, are 20% higher than the rates of a heavily taxed utility in the state of Washington.

Covering some 80,000 square miles, this "only true flower of socialism," so blessed by Norman Thomas, noted socialist, has destroyed or partially destroyed 32 major electric utility companies, and has encroached upon at least 30 fields of private business. Contrary to a misinformed public, wealth has not been equally distributed; people are neither healthier nor happier. What's more, as time goes on the people will grow weaker and the government stronger. We can safely predict that.

It Is Not Too Late

Is it too late to preserve private enterprise? Is it too late to save the electric industry?

A glance into the bedroom shows that Mr. Private Electric Company is still kicking. He yawns and stretches. So with numerous items already on the slate designed to preserve his hide, we humbly re-emphasize the following:

1. The electric utility to save itself must first *want* to save itself. That is elemental. Wishfully waiting, hoping eternally for the best, never will do the job. Wanting to survive is preliminary to any public relations program. After that, the managers of all business firms in the free enterprise system must somehow be stirred to action. The problem includes everyone—3,300,000 business firms—not merely one.

2. Next, we may as well admit that "encroaching statism" has deeper meaning than may be found in casual politics. There can be no mistake as to the momentous seriousness of things in our world today—the painful need to define the relative position between capital and labor, of the rich and the poor. We in large industries cannot dismiss social problems by running advertisements to remind the public of the firm's tax payments. A remedy must be found, and found quickly, for the actual wretchedness and discontent that exists over the nation. Symptoms of unrest with labor and the consumer have been apparent for many years, but no true insight has determined what is really wanted. All we know is that voters in various areas have swarmed at the heels of politicians who promised to clean up the slums; attend to 24,000,000 people now undernourished; protect labor's gains; safeguard health; feed the unemployed, and guard against unscrupulous possibilities of investment.

It seems, therefore, to be a business problem of broadened human relations concepts, and that industry which first determines *what can be done* by way of social and employee betterment will make greatest progress toward survival.

Strangely enough, in the deeper rumblings of public concern there is a bid for equality, security, practice of the Golden Rule, rather than for the material goods produced by hard-hitting and efficient businessmen. Perhaps the niceties of production need not quite so much emphasis.

One Northwest utility discovered that individually the population was concerned with security of jobs, followed by a personal desire to learn, to do something important in life, recognition from fellows, affection, a good conscience, and self-expression. That is a long way from institutional advertising that talks about kilowatt-hour consumption.

That same area expressed as vital community needs the matter of education, industrial growth, aid to youth, traffic safety, crime prevention, health, amusements and city beautification. People expect very commonplace and very practical results, while the average businessman is primarily concerned with methods which may gain desired results, thus permitting a loss of prestige in favor of the politician. When, we wonder, will publicity and advertising cease pomposity of theme and talk about things the public can touch, taste, feel or smell?

3. The ruthless activity of a hostile group bent upon discrediting private industry must also be met with new courage. That is a public relations problem which rides on one wheel, manned to be sure by the radical, the office seeker, the malcontent. Somehow industry can well afford to take the kid gloves off and spend time discrediting the agitator.

4. Finally, since employees are the key to general public attitude, it seems imperative that industry cultivate employees, thoroughly inform them, and then they will make use of their knowledge.

Let Breadwinner Live

Advocates of public ownership will take a tumble in every fair count when compared with achievements of private industry. Why, then, murder the breadwinner? Is it right to give up without trying? Only a few utility workers have sincerely faced realities and tried to improve their situation. Great gains have been made in those areas, but grandma learned long ago that one swallow does not make a spring. So who will arouse the neighbors? Urge the victim to shout for help? Where are the Vigilantes? Where, Patrick Henry? What sleepy citizen will ride forthwith to the next town?

Discouragement in some quarters should not be accepted. Undoubtedly twenty years of indoctrination has made our youth secure in the ideas of the "Welfare State"; geared them to domination by government; prejudiced them against the American business system; financial interests will play both ends against the middle; government office seekers will smear anew; monumental structures called federal dams will continue to dot the landscape; tired citizens will philosophize that all must now bow to the inevitability of change; 14 million people will continue to receive government pay checks; another 15 million union members — our own employees — will be harangued by left-wing organizers.

Still, every great and command moment in the annals of the world, says Emerson, is the triumph of some enthusiasm. It is not too late to save private property and business management.

Bombed from land, sea and air, prisoners at Dunkerque managed somehow to escape. The ball game is never ended until the last man strikes out. Helen Keller, brilliantly informed, accomplished the impossible though deaf, dumb and blind. The naked Derar who was horsed on an idea when women fought like men, Christopher Columbus who rode to his destination in chains, Washington at Valley Forge—all made good against insurmountable odds. Private enterprise is not dead, and indeed Mr. Private Utility need not die if everybody will get to work.

That America will not knowingly forfeit her system of free enterprise is the conviction of ADAM S. BENNION, vice-president of Utah Power & Light Co. He tells here of his organization's program to inform employees and their families of the creeping paralysis of state socialism as opposed to the freedom of the American heritage. Hope lies in cooperation between government and industry, he says. Therefore the challenge to management is to acquaint people with

AMERICANISM AT THE GRASSROOTS

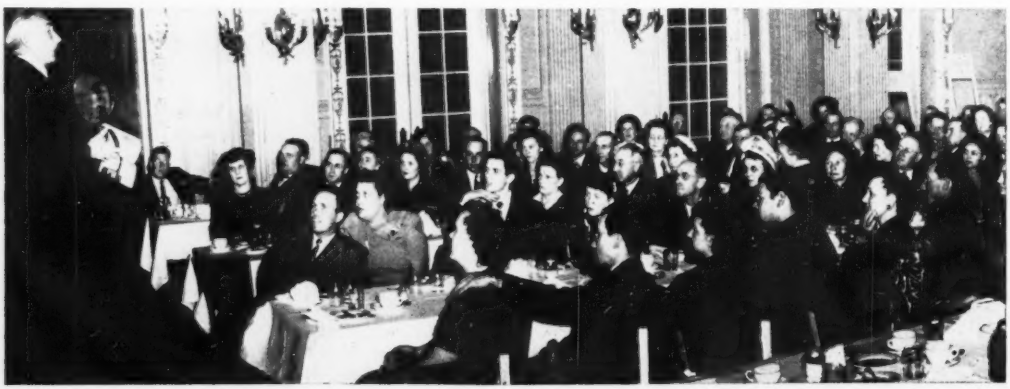
THESE are critical days. America is once more at the crossroads. This time not as between peace and war, but as between the perpetuation of her free enterprise system and some kind of state socialism. We are called upon to determine whether or not we shall perpetuate the system inaugurated by our forefathers—a system which has made of this country the greatest nation in the world—or whether, under promises of security and more equitable distribution of wealth, we shall fall into the errors of some kind of planned economy.

For several years now it has been perfectly clear to those of us of the Utah Power & Light Co. that either we must stem the tide of federalizing our industry, or we must be prepared to have the government take us over. And England has taught us, of course, that when the government takes over one industry, that is but the introduction to complete socialization. No thinking man in America needs to be told of the dangers inherent in the taking over of the power business, and medicine, and banking, and housing, and insurance, ad infinitum.

And so we decided to do something about it. And having drawn up a rather systematic system of approach covering the principles of Americanism, and more particularly of their application to the electric power business, we first launched sixteen dinner meetings for employees and their wives. At those dinners we sat down with 2,400 men and women. First of all we explained the purpose of the meeting; then we discussed the principles underlying the American Republic. This we did through a presentation of the historic "Freedom Train" documents — documents that breathe the early history and spirit of America. Second, we presented one of the most outstanding films ever produced on the principles of American freedom *Of This We Are Proud*, put out by the Nash-Kelvinator Co. Third, we then made application of the documents and the film to the electric power business. This discussion centered in the achievements to date of the electrical industry, the threats of federal valley authorities, the folly of competition between the government and its own citizens, and, finally, a program of suggested cooperation.

It is clear that the government can either compete with and destroy its own institutions, or, by adopting a program of genuine helpfulness, it can promote every conceivable need of its people and still sustain the men and women who have built the electric power and light industry into a 16 billion dollar enterprise. To illustrate, it is perfectly clear that REA can join hands with power companies, taking energy from them and supplying it to scattered individual farmers who, living one or two to the mile, could hardly be expected to pay what would be necessary to yield a return to a private unsubsidized corporation. In brief, REA and the private power companies, joining hands in a common purpose, can sustain each other and offer complete coverage to every home in the nation.

The same kind of cooperation can



A capacity audience attended the Salt Lake division dinner for UP&L employees and their families. Similar audiences appeared all over UP&L system

be carried into the relationship between the federal government in its harnessing of the great rivers of the land and in the building up of the private power companies. In those great projects of reclamation, flood control, reforestation, and soil conservation, the federal government can do those things that only the government is big enough to do. But when they come to the disposition of power, they can handle it through the agencies which have already been set up to do the job. There is no need for the federal government to build transmission lines, and distribution lines, and do the marketing for the power available at their great dam sites. Once they enter into the competitive field, they will destroy the existing power companies to their own ultimate loss. There is a program of cooperation through which the government, the private power company, and the customer all profit. That kind of procedure hints the real spirit of America. It is our great hope of the future.

After all of these matters had been explained fully to the employees and their wives, two pamphlets were put into all of their hands: *Good Citizen* (published by The American Heritage Foundation, 17 E. 45th St., New York 17, N. Y.) and *Show Me Any Other Country* (published by The Foundation for Economic Education Inc., Irvington-on-Hudson, N. Y.). Nor did the program end with these dinner meetings. Following them, supplementary materials were put into the hands of all supervisors of the company. Some 255 supervisors, divided into 17 conference groups, have held monthly meetings throughout the year. In each conference, concrete helpful materials, covering the critical issues which we now face, have been put into their hands. To date the following materials have been used:

Lest We Forget by H. W. Prentis Jr., published by Armstrong Cork Co., Lancaster, Pa.; *Weapons of Democracy*, published by Everett Pulp & Paper Co., Everett, Wash.; *The Free Enterprise System* by Phelps Adams, chief of the Washington Bureau of the New York *Sun*, published by National Association of Manufacturers, 14 W. 49th St., New York 20, N. Y.; *Encroaching Socialism*, published by *Public Service Magazine*, Charles W. Battley, Publisher, Pioneer Bldg., St. Paul, Minn.; *How To Be Popular Though Conservative* by Fred G. Clark and Richard Stanton Rimanoczy, published by D. Van Nostrand Co. Inc., New York City; *The Miracle of America*, published by The Advertising Council Inc., 25 W. 45th St., New York 19, N. Y.; *Beyond The Horizon*, published by National Association of Manufacturers, 14 W. 49th St., New York 20, N. Y.; *What You Owe Your Country* by General Omar N. Bradley, published by Crowell-Collier Publishing Co., 250 Park Ave., New York City.

To keep these discussions freshly in the minds of employees, the company has subscribed for and distributed to the homes of its men and women the outstanding pamphlets done by the American Legion. These 12 publications have been sent one each month to every employee on our pay roll. They have been sent to the employee's home in order that the family might get the benefits of the distribution. It is a significant thing that the boys of the Legion who fought our fights in the second great war then came home and inspired this movement of putting the following 12 pamphlets into our hands. We thought so much of their efforts that we have passed the following pamphlets on to all of our employees:

Wanted Ten Million Salesmen; 7% of the People Are on Top of the World; Dictionary—50 Strange Words Made Plain; Dividends from Democracy; The Worth of the Age; Belief in the American Constitution; Medal of Honor; What is Free Enterprise; Through the Ages; It Could Only Happen in America; For Safe Keeping; Know the Truth and You Shall Be Free.

Intended first of all as a program for the building up of our own people, this undertaking has spread like a contagion. When the Freedom Train documents were made available to our various division offices, they just naturally were called for by the service clubs, literary clubs, churches and schools of the various communities. The film, *Of This We Are Proud*, has been in constant demand since its first showing. Our records show that through the documents and the film we have reached almost complete coverage in our territory through the following agencies:

1. Service Clubs, such as Rotary, Kiwanis, Lions.
2. High schools and junior high schools.
3. 4-H Clubs.
4. Boy Scouts.
5. Parents and teachers.
6. Educational groups.
7. Businessmen's organizations.
8. Churches.
9. Electric dealers and a great variety of business institutions.

A conservative estimate indicates that we have met directly more than 62,000 people in the state of Utah and many other thousands in neighboring states.

As a result of work done in connection with these groups, it is our firm opinion that America never knowingly will forfeit her system of free enterprise. Our challenge is to see that the American people understand the menace of the creeping paralysis of state socialism which, under the promise of security to all of our citizens, never acquaints them with the regimentation and loss of freedom which lie hidden in federal promises of help and direction.

RAY W. TURNBULL, Pacific Coast commercial vice-president of General Electric Co. says that the manufacturing branch of the electrical industry now faces three realities: (1) This is a buyers' market; (2) despite higher material and labor costs, prices must come down; and (3) now is the time for merchandising and salesmanship. Because it is closely knit, closely integrated and because it is ready as it has never been ready before, Ray Turnbull says that

A FIGHTING INDUSTRY MUST FIGHT

WHEN the electrical manufacturer of both industrial and consumer goods is asked to face the "realities" of today, he realizes how closely connected he is with all other branches of the electrical industry. Whether we're selling power or electric equipment, whether we're power suppliers or contractors, or consulting engineers or equipment manufacturers,—we're all bringing the same thing to the same customers. We are bringing to industry and home alike the many benefits of the full use of electric power.

Speaking philosophically about the word "reality," we know that it means "that which has an objective existence, and is not *merely an idea*." Exploring definitions a little further, we find that "realism" means the "disposition to think and act in the light of *things as they are* and to repudiate visionary schemes." That is exactly what we can do and must do in 1949, and I might add "thank heaven."

I say this because I firmly believe that we are back to normal after a few lush years when the manufacturers had more business than they could possibly handle. Public demand will no longer be a virtual subsidy. During the war, you will recall, there was a great deal of talk about the problems we would face when hostilities ceased. Actually the problems were upon us at that time, brought on by abnormal wartime conditions. Those were the *real* problems. Today in 1949 we have the ordinary, everyday problems of more normal business intercourse and now we again have the conditions that have made American business progressive and successful.

What are these everyday problems? There are three. Simply stated there is, first, a competitive situation which is a healthy condition. Secondly, the costs of materials and labor are higher. This challenges industry to develop new materials and new techniques. Finally, we are facing the need for the intensive development of markets in industry and in the home.

The first problem, I said, is a healthy one that we should be glad is upon us again. The "buyers market" has always been the stimulus which helped immeasurably the constant development of the industry. At no time has the electrical manufacturer given so much attention to the development of better products as he is giving today. At no time in the history of the world has there been a richer field of know-how in the minds of our engineers, physicists and chemists in our laboratories and our factories.

Certain factors of 1948 stand out as significant in telling us what is ahead during this year and next. With record employment, our country turned out $250 billion worth of goods and services. This is over 50% of the world's total. Yet the significant event of the year was not that prices reached an all-time high of the postwar boom, but that by late fall they had started to come down. During the past months, there have been some misgivings which were due to the first *real* changes from a seller's to a buyer's market. Various groups are affected differently by what is essentially a healthy economic readjustment, but such changes are bound to register on the economic seismograph. Actually we are merely returning after all these years to the prewar scheme of seasonal and normal buying. When prices rose during 1948, temporary dislocations and a tendency to exaggerate the fears of good business prospects caused a slowing down not only in consumer buying but in inventories and speculation.

Economists have taken a relatively calm view of 1949, and while the forecasts vary, they hover around dead center—either a little lean or a little flush, but all agreeing that the corrective readjustments being made have kept our economy in a basically sound condition. The appliance business, for instance, is definitely back on a seasonal basis. In January of this year (an off-month for appliances), inventories of General Electric distributors throughout the country were reduced 6%.

In the electrical industry, there is every reason for optimism. For one thing, we are an integrated industry—the manufacturer, the utility, distributor and contractor. Out of this fact have come our greatest triumphs in making America what it is today and what it will be tomorrow. And our progress is due to the continual awareness of that fact.

What about employment and the wherewithal to buy industrial and home equipment? Our population has doubled in the nation since 1900, but the employment rate has tripled. Income of the American people has never been higher. Dividing the American family unit into fifths and comparing 1941 (a prosperous year) with 1947, you will find that everyone was making more money. The highest fifth earned about 18% more; the next about 20%. The third highest took in 24% more than in 1941, the fourth 24%, and the fifth (the lowest income group) earned 42% more than six years before. These figures are significant in that they show that not only all units earned more, but that the bottom fifth earned the greatest increase. Wages apparently will remain high.

In California since 1940 we have an estimated increase in population of 3½ millions, and by 1960 it is believed the total population will reach 13½ millions. We, in our manufacturing and sales forces on the Pacific Coast, have increased employment from 2,000 to 5,000 in the past five years. The annual dollar production of the com-

pany's manufacturing operations totals in this area more than $48,000,000. Since 1944, $10,000,000 has been invested. Two new manufacturing plants have been built and put into operation in the past two years.

New Markets Opening

These new developments open up new markets. But next we must be cognizant of the fact that the cost of materials and of labor, which has about doubled, is another challenge to the manufacturer for the development of more efficient equipment, better application of power, and improved marketing and maintenance processes. While appliances for the home are priced higher than prior to the war, the increased purchase price is far less than the higher cost of household labor for whose work they have been applied as a substitute more and more through the years. However, no appliance manufacturer can continue to obtain business in some major appliances which are priced too high for the mass market. Several manufacturers are conducting a research program designed to produce simplified versions of high-priced appliances which perform the same functions as efficiently but will be priced much lower. This involves considerable technological advances and will take some time. Value received by the customer will be greater than ever before.

In the industrial field the long-range prospects are definitely for greater electrification because of the demands for greater production and lower unit costs. Before the war the average production worker in manufacturing and mining used above $4\frac{1}{2}$ kwh. per man-hour; today he is using 5.7; by 1955 it is estimated that each worker will account for about $7\frac{1}{2}$ kwh. per man-hour. The effectiveness of labor force depends not only upon its size but upon how fully it is employed. Productivity has increased, and we produce more goods per man because we use more power per man.

The surest method of realizing fulfillment of our potential is to plan to keep our products and services the best. We must give more service to more people at lower cost. It is the industrial processes themselves, rather than electric equipment, which are rapidly and continuously growing obsolete. Modernization may take thousands of shapes and forms, but the process must be continuous. New processes being developed now by new industries such as in the field of electronics, or better applications of old, will add further to the electric power load. Today line shaft and belts in a machine shop have disappeared and each tool has individual motors. Today we do not stop at this point. We provide each tool with motors for several motions. That's why we sincerely believe that the industrial market for electric power and equipment will not approach a saturation point within our lifetime. And in the home we are just at the threshold of the application of electric power to everyday living.

The electrical industry is a fighting industry. I believe truly that, more than any other single industry, it has been without fear. We haven't resisted change—we have invented change. We lowered prices. We raised prices, and then we lowered them again. We did what we had to do at the time—honestly and sincerely. Throughout our entire history, and more than ever in recent years, we have been fighting with weapons of the best possible research, increased productivity, fine engineering and manufacturing. The absorbing idea of all electrical manufacturers has been the desire to provide our customers with more and more of the good things in life at lower and lower costs. This sound and successful policy still stands as a beacon in a world that has for many years past and that will, no one knows for how long ahead, face the confusion of an economic revolution.

The task of giving more service to more people at lower cost, plus the important factor that the public should be kept fully informed of our objectives, should begin among our own employees and our product distribution agents who meet the public. Whether a member of our industry meets our customer on a service need, on a credit investigation, or as an appliance salesman, he should be prepared to inform him as to the fullest value available from electrical living.

Employee Training Essential

As manufacturers, we feel a new sense of responsibility toward the training needs of those employees who meet the public or instruct others. We are convinced that, in the past, product development too often outpaced our facilities for acquainting the public with newer use-values engineered into electrical equipment.

Throughout the electrical industry there is a new determination to step up sales, not merely to make up for the passing of the postwar backlog but to forge brand new markets for electrical methods. Our company like many others has found a phenomenal market in the West. For instance, our refrigerator sales by dollars were 350% higher in the Pacific District than in 1940 while the average nationally showed an increase of 236%. Range sales were 870% higher in the West as compared to a national increase of 510%, and home laundry equipment sales for the company jumped 2,535% in this region against the national increase of 1,570%. This, we can say, reflects excellent business in the consumer appliance lines for the West.

Here we are destined more than any other part of the country for an "electrified future." In the electrification program for the nation as a whole and the Western states particularly, it is not just a matter of adding to manufacturing equipment and facilities but it is the strategic location of highly specialized manufacturing plants widely dispersed across the country—many of them on the West Coast. The manufacturer is going back to specialization in merchandising and sales techniques such as was practiced before the war. Although we hit, what in my opinion was, an all-time low in selling techniques during the long war years, because everyone concentrated on winning the war, sales promotion and advertising men are again in the field. The manufacturer again is producing, at the fountainhead position, the marketing plans and merchandising services which will most effectively turn this public interest into buying action.

Future Looks Bright

Here in the West I feel that we are extremely fortunate in the prospects for the future. This year California is celebrating its hundredth birthday. Our energies have not decreased, being applied toward expansion and growth. The force of our ambition has been greatly increased with the acceptance of our program of electrification by the rest of the country. Leadership in the record usage of electric service and products for new development has come out of the West. It is the responsibility of electrical manufacturers to take their share of intensive sales promotion activities to maintain this leadership. Such leadership for our industry imposes the responsibilities for sound policies, constructive action, and above all the enhancement that comes from continuing to keep the various segments of the electrical industry aware of and considerate of the interdependence of one on the other.

No single ingredient is more important in the nation's economy than the ability to produce electric power. No single factor contributes more to a continuing improvement in the standard of living. We believe in these facts. We hope that you, too, will believe in them because a valiant faith in your own future is the principal ingredient of success.

Electrical West—Vol. 102, No. 6

The distributor or wholesaler has been able to process all the volume of merchandise and supplies from maker to market on a small margin because volume was heavy. What he faces, with volume slackened, costs of everything up, but narrow margins, the plain-spoken, successful distributor, AL H. MEYER, president of Leo J. Meyberg Co., points out, is to make the most of new things like television, cut out the frills and trim costs where possible and develop

MORE EFFICIENCY IN DISTRIBUTION

WHAT is the outlook for the distributor or wholesaler as we come into the second half of 1949? Well, I think it can best be said that the industry has reached a new plateau which it should consider normal. It isn't as high as the peaks of 1947 or 1948, but it is still greatly in excess of prewar, in this Western area, anyway.

To be sure, certain ambitious manufacturers' production schedules are bound to be revised. They were all geared up to levels so high each of them must have thought he had to carry the full market all by himself.

With this revision of production schedules everyone down the distribution line will have to readjust his sights as to the volume of sales he's going to get. And with this lesser volume will have to come some new thinking about overhead. The easy days are over.

The industry has done a perfectly stupendous job in filling the pipelines so rapidly. Nobody imagined it would be able to do so in such a short time. This is true not only of vacuum cleaners, which came first, then washers, refrigerators and all the other appliances—but it's true, they tell me, in the supply business.

I look for the so-called durable "white goods"—the refrigerators, ranges, washers, etc.—to proceed at a lower but a still healthy rate of sales because there is still a tremendous replacement market, if nothing else.

I don't look for any particular changes in distribution, except minor details. Sure, there's talk of direct selling by manufacturers to dealers and even to consumers. We heard that kind of talk before the war, too. But that has its limits. Before long somebody has to perform the functions of a distributor or wholesaler somewhere along the line. Even the big mail order chains do that.

What it means is that the distributor must function more efficiently to justify his place in the picture. He has to do a better job in giving adequate distribution to the manufacturer through carefully selected and well-trained retail outlets.

A wholesale weeding out is taking place. This is going on at all levels—retail merchants, distributors, manufacturers. A distributor has to take this seriously and constrict his activities so that he'll wind up with a healthy bunch of partners in the field.

How should a selection of dealers be made? Well, those who have been in this business a long time pretty generally have gone through a careful selection process in the franchising of their dealers. The wise ones didn't spread their distribution so wide that there's a lot of weeding to be done. As a result they are in pretty sound shape now.

One thing is certain. The prewar selling zeal and skill must be brought back. Most salesmen today, both dealer and distributor salesmen, are unskilled. They aren't used to a buyer's market. A lot of them have never worked in such a market in their lives.

Now, there's some question in my mind whether the current distributor's margin provides for prewar training and sales expense. Margins have been curtailed because up to now it didn't take selling and manufacturers wanted to hold prices down at consumer level despite increased labor and material costs.

But the margins are so curtailed now that they won't support training expense. If the manufacturers want high-grade sales training and sales promotion, they'll have to put the magnifying glass on that problem.

It's one thing to talk, but another to find the wherewithal to do it. One manufacturer has made the statement that it will take "extreme ingenuity" for a distributor to operate and make a net profit. That's an understatement.

For with margins down, expenses up and volume down it is going to take more than ingenuity to do something with that sort of a situation.

Distributor margins are as much as 30% shorter than before the war. With good volume we may not be entitled to much more. But volume is tapering off. Is there anything we can look forward to for some added volume to help us out?

Television gives promise of being a great new industry in the making. As with anything new, a great many people will try to get in the act. It will be the same old story. There will be lots of losses as well as some money made. But television is big-time stuff. It precipitates financial problems. Everything about it runs into tremendous amounts of money.

So this new industry is going to tax the dealer's credit structure, and in many cases that of the distributor as well.

Television is being brought on the market at reduced margins—which I think may be a good thing for introductory purposes, only. The turnover ought to be big and as long as dollar turnover is great, reduced margins are all right. It was the same in the white goods when the volume was heavy. When it recedes, then margins may need readjustment.

There's more of this short margin trend in television even than in white goods. And it means, as I said before, more efficient distribution at wholesale and retail levels. I don't know whether we are entitled to make a lot of money if we don't need to exert some intelligence and a lot of effort.

The current complaint is that there are tremendous increases in the expense of doing business. Well, it doesn't leave much for frills, does it? Everything that is done has to yield

a result. Expenditures have to be carefully planned and fully justified.

Right now, with this readjustment going on, any changes made are reflected in lower prices to the public. But these lower prices aren't because of reduced manufacturing costs. They are all the result of overstocks.

These overstocks cost just as much to make, yet warehousing costs so much that they are being reduced in price now to move them. The public may get the idea that this is a downward trend in prices, coming from higher efficiency. There will be a little of that, but in every case that I've seen so far, these price cuts have been liquidations. Prices will firm up when inventories get in shape again.

Naturally everyone will attempt to give lower price levels to stimulate volume as fast as possible. Labor is in better shape than last year. It is turning out more work for the same pay. Materials are easier for the manufacturer to get. But these are minor factors.

I don't think there is going to be any tremendous profit made in the industry this year. Most distributors apparently are going to be content to keep in the black in this readjustment period.

The manufacturers certainly went wild on productivity after the war. Most of them acted as if they thought they had to supply the entire market alone. Nowadays one factory alone is capable of turning out the full volume sold by the entire industry in 1939.

But here we are back in the same old battle again for sales and position, with all the leaders out to hold their leads and the newcomers out to take them away. It's unhealthy that everyone wants to expand too rapidly. This part of the industry will have to get back to sensible production.

When the television business gets rolling I believe it will run into figures that are almost terrifying. Television is large-unit-sale business and runs into big figures quickly.

People are waiting for a drop in television set prices but I don't see that it can come. The situation isn't the same as when refrigerators first came out. At that time preliminary costs were high but as volume and know-how progressed it was reflected in lower costs and lower prices.

But in television this isn't the case. Most of the companies who are making television are fully experienced in the making of this kind of equipment and have developed all the efficiency that is possible to get out of manufacture. Besides that, every television set in reality has the equivalent of five receivers in it, and has to be built to much stricter Underwriters' standards than any radio set. So I don't see how television sets can be turned out very much cheaper.

Any price drop that I can see would be due to liquidation or from a further shortening of dealer and distributor margins. I know this would not be popular.

So in television there may be some readjustment, but not an awful lot. It won't be what the public thinks, namely, that they will get a receiver, giving them a large picture, for around $150. No good television receiver is going to drop below the price of a fairly high-priced prewar console, unless someone gives it away.

In general the entire industry faces challenges that will be difficult, but by no means impossible. We must learn to do a satisfactory business at reduced volume levels, that's all.

What has happened to all that backlog of appliance orders, that long list of appliance prospects? Well the pipelines have been filled and some one of the greatly increased number of dealers has sold all the demand. Where should a dealer turn to get business? From a realistic survey of the facts, HOWARD J. EMERSON, Pacific Coast editor of Electrical Merchandising, advises the appliance industry that the time has come for it to readjust its sight and

START WITH REPLACEMENT MARKET

THE replacement market for electrical appliances is the most important internal subject facing the electrical industry at the present time. This replacement market must be fully developed to create the large, steady volume necessary to maintain the prosperity of every branch of the industry. And unless it is fully developed, the recession that existed at dealer level from October 1948, until it was relieved by the normal seasonal upswing in April, will be minor compared to what may happen.

However, the development of the replacement market is an industry job. It cannot be dropped into the hands of the retailer and forgotten. There will be a day not too far hence when the utilities will want to build more domestic load. In the last few months, most manufacturers and distributors have had more electrical merchandise than the public will grab off the dealers' floors. It will take the efforts of strong, alert, prosperous retail organizations to build the electric load through the selling of the manufacturers' and distributors' merchandise. But until a large percentage of the retail sales of major appliances are sales that replace older electrical appliances, these strong dealer organizations cannot exist.

Because it is an industry job to re-establish intensive selling of the replacement market, it is timely to remind every branch of the industry just what this replacement market means in dollar volume and in electric load, and some of the important actions that must be undertaken.

The word remind is used because everyone who worked in the electrical industry before 1945 lived and breathed the opportunities that awaited when the end of the war would permit the industry to go out and sell millions of new postwar appliances to the millions of people who owned the old, outmoded and worn prewar appliances.

The industry had studied the replacement market, graphed it, charted it, and was ready to sell it. But something happened.

Unexpected Factors

The end of the war brought several unexpected factors which changed the picture and caused a change in the industry's approach to appliance retailing from the summer of 1945 to the fall of 1948:

1. The shortages of major appliances, in relation to the demand, made it unnecessary for dealers to sell, made it unprofitable for utilities or distributors to encourage the development of retail sales organizations as long as there was a surplus of buyers. Short margins discouraged large allocation to advertising and promotion when it wasn't needed to get immediate results. Many utilities did not welcome additional domestic load.

2. There was an unprecedented and unexpected market of new electric customers whose homes needed new appliances. There was a backlog of 6,000,000 new electrical customers who had received electric service after appliance production had been discontinued in the fall of 1942. By themselves, these were enough to drain most of the new appliance production during 1946 and 1947. As a result the retailers attention was taken away from the replacement market.

3. Unexpected by most of the industry were the products they had available to sell and the prices which they were forced to quote. Prewar styles at considerably above prewar prices had to be satisfactory to the millions of prospects who had no appliances, but they were hardly a satisfactory selling line toward prospects who had a still serviceable prewar appliance.

Relation of Trade-ins to Sales

Many dealers and others will question the above statement and say, "Why, even from the first deliveries after the war, I sold many appliances to people who had an old model they were replacing." And they would be partly right, but would not realize that the dealer was selling into the replacement market but not using up his potential. The market was still there for him to sell because he was not taking a trade-in on the sale. Here are the figures:

The McGraw-Hill publication, *Electrical Merchandising*, has maintained a continuing survey showing the relation of trade-ins to total sales on all major appliances. In 1947, 25.4% of all refrigerator sales were made to homes owning a refrigerator, but the dealers accepted trade-ins on only 1.3% of their total refrigerator sales. During the first six months of 1948 the percentage had increased to 4.81 but it was still far short of the profitable year of 1941 when appliance dealers took trade-ins on 22% of all refrigerator sales. During 1947, 33.3% of all washing machines sold went into homes where an old washer had been in use. But the appliance dealers took in trade, only 6%. Compare that to 1941 when retailers took trades on 42% of all new washer sales.

Potential Merely Transferred

If those percentages are converted roughly to figures, it is apparent that for every 100 refrigerators sold by the dealers, 25 went into homes already having a refrigerator, but only 4 of these refrigerators were taken back to the shop. Dealers took possession of only 6 of every 34 old washing machines they had "replaced" with postwar washers. That leaves 21 old refrigerators and 28 old washers unaccounted for within the industry. But the industry knows what happened to most of them. It happened in every community. The owners sold them privately at well above the existing OPA prices to people who were unable to get a new washer, or they gave them to newly married sons and daughters. Since only about 8% were scrapped, at least 20 old refrigerators and 24 old washing machines continued in use in the homes of other owners. So instead of using up his replacement market potential in the early postwar years, the average dealer was merely transferring it.

As a result of the economic conditions under which he was operating, the appliance dealer neither made any appreciable dent into the vast replacement market potential, nor did he find it necessary to set up the advertising and promotion programs, the outside sales forces with training and management organizations, and the facilities for disposing of used merchandise. And while the condition existed, the dealer and his suppliers profitably operated.

The first break in the condition was evident to many in the industry when the 1948 lines of major appliances were announced by the manufacturers. Although there were still enough shortages and backlogs to keep demand well ahead of supply for most items, the new lines indicated that at long last there were new models with postwar styling and design that could be sold in the replacement market. The second break in the condition came in October when the supply of major appliances exceeded the walk-in demand. These two changes refocused attention on the replacement market because for the first time it was necessary to turn to this profitable but harder to sell market, the dealer had the type of merchandise that could be sold.

Market Available

Why, then, did the electrical appliance business continue at a low, and for many dealers and distributors, unprofitable level from October until early April. Six months of loss for many dealers and distributors, and a period when some dealers and distributors slipped into bankruptcy while the following market was available:

1. Replacement of the 2,345,760 electric refrigerators that had been sold in the eleven Western states before the war. All were seven years old, and 1,500,000 of them were ten or more years old. None compared with the design, quality and convenience of the refrigerators that were piled up in dealers' and distributors' warehouses.

2. Replacement of the 2,430,000 prewar washing machines, of which only a dribble were automatic and a great many didn't have the action, mechanism, pump and other features of present model conventional washers.

3. Replacement of most of the 547,000 prewar ranges in operation throughout the Western states—ranges that don't compare with the fine ultramodern electric cooking instruments that sat on the dealers' floors in most sections of the West.

4. Replacement of the unknown — but sizable number — of refrigerators, washing machines and ranges that were shipped to the Western states by their owners during the wartime and postwar migration.

Not Ready for Market

To most in the industry, the reason was simple, but largely unavoidable. The market was there and the dealers had the goods to sell—but neither the dealers nor the distributors who aid and guide them, were mentally or physically prepared for immediate selling of the replacement market. Possibly only the manufacturers, whose national advertising campaigns of a pictorial and descriptive nature were suitable equally to the replacement market, were able to fit quickly into the changed picture. But these same manufacturers had not provided for a margin arrangement that provided for sudden and heavy expenditures in sales costs, promotions, etc., by their distributors and dealers. Distributors' salesmen in too many cases were inexperienced or lethargic in the methods of developing business at dealer level during a buyers' market. Too many

dealers had been content with walk-in business, others wanted to develop the necessary sales promotional facilities but were handicapped by lack of good sales personnel, either trained or potential, and were hesitant about the expenditure in anticipating a market condition that might have happened two years before and might not happen for another two years. The industry was in the position of a group of people walking around in a dry swimming pool—they couldn't learn to swim without water and when the water came it was too deep for anyone but good swimmers. Much of the industry was bound to flounder, the weaker ones to drown.

Upswing Brings Second Chance

But that segment that remembered how to swim and those whose floundering has been successful enough to keep them going, have in this spring and early summer seasonal upswing of the market, a second chance—maybe a last chance—to start tapping the replacement market that will be the foundation of their businesses in the years to come. But, as mentioned above, the retailer can't do it alone—he needs the personal, promotional and financial help of those particular groups in the electrical industry, the utilities, distributors and manufacturers, who will profit equally with him as this replacement market develops.

Probably no better and more important help can be given the appliance dealers and their salesmen right now through the utility contact men and the distributors' salesmen, than a correct and up-to-date mental approach to the replacement market. It is not out of place to bring psychology into a discussion of the dealers' problems—for it has been a fundamental in all specialty selling.

So long as the retailers look toward the replacement market with reluctance, they are bound to fail in realizing its potentialities. And there is no more important word used in the industry's approach to the replacement market than the word "saturation"—and possibly the trade papers have been most guilty of using this word. There are too many dealers to whom "saturation" means "the number of people who own a particular appliance and therefore do not need another one." Selling into this market therefore is interpreted as a struggle to loosen the owner from an appliance with which he is perfectly satisfied. Used this way, the word saturation becomes a cause for mental depression to dealers. Although technically correct, it is a bad word psychologically for the industry.

Supposing the whole industry approached the replacement market with a different word, "acceptance." There's a good word. It is an encouraging word. It indicates the number of people in a dealer's market area who no longer have to be sold on the value of a particular appliance, people who have used it as part of their daily lives, who must continue having one, and who will eventually buy a new one. The dealers' apathy towards the replacement market can be broken down considerably by reminding them that no woman ever willingly turned in her old washing machine on a new washboard.

The proper mental approach, the knowledge of the profits to be gained and the willingness to develop the replacement market must be backed up by thorough physical preparation, and again this requires the support, guidance and assistance of the rest of the industry. It is known that newspaper advertising and other promotions, important and essential as they are to the over-all dealer operation, by themselves can produce only 15% of the average dealers business. Therefore the dealer must prepare himself now for active selling in the field. And that means more than the hiring and training of a sales force. There are many factors that must be straightened out by the dealers, and many in which they need help from the utilities and distributors:

Clear Up Franchise Problems

During the last six months, or the next three, the dealers must have cleared up any problems regarding franchises. During the last three years many dealers have made mistakes in their choice of franchises and in the number that they can handle profitably. Distributors have made similar misjudgements in selecting individual dealers, and in their decisions on the number of dealers to franchise in a given area. Both these must be corrected. Both dealers and distributors must approach the replacement market with full confidence in the lines they carry or the dealers they franchise, and only such complete confidence can produce the sales training that will be successful in selling to people who are presently satisfied with a particular appliance.

During the same past few months or the very few to come, the dealers have had or will have the opportunity to organize and train sales forces to sell brand lines in a highly competitive market—and here, particularly, is the need for further help from the distributor. Behind this effort of the dealers to train specialty salesmen in the selling of the replacement market must be more assistance from the manufacturers for whom the dealers are concentrating their sales efforts. Manufacturers cannot sit by and watch the dealers sales cost rise to the prewar level of eight to ten or more per cent of his gross, and feel that present margins based on abnormal postwar manufacturing conditions will continue to be satisfactory. (By the same token, dealers, the manufacturers are not going to feel that larger margins are in order if they see the dealers throw the extra amount away in price cutting instead of advertising, promotion and sales costs.)

Dealers who have not taken this time, or who don't immediately, to study changes in their local markets, will find themselves tossing about in the middle of the replacement market like a boat without a rudder. No other section of the United States has had the changes that have come about in the eleven Western states. In every state, in every community, every vestige of prewar social and economic life has been reshuffled and redealt—and these changes had better be part of the dealer's knowledge before he assigns any salesmen.

If there was anything more serious to the average appliance dealer during the past six months than the lack of customers, it was the presence of a large inventory. The dealers who have been carrying an inventory out of proportion to their normally expected volume of business, those who stocked several brands of the same appliance, those who bought heavily of the off-brands, etc., during shortages, have had time during the last six months, or will have now, to establish those products and those brands which they can handle profitably in a competitive buyers' market. Inventories must be in line with the firm's volume and capitalization, or there will be more trouble ahead.

Hole-in-Wall Days Over

There has been time, and there is a little more, for many dealers to relocate and to redecorate their prewar stores to meet present-day requirements. The day of the "hole in the wall" is gone, the industry hopes. Recently established, postwar appliance concerns have led the way in developing an attractive physical approach to the prospects, the established prewar concerns must reconsider their approach if they want to give full backing to their salesmen's efforts.

The dealers who have not made themselves extremely brand conscious need a quick briefing on the individual selling points of each model on their

floors, for in no other market are these selling points more important than in the replacement market.

To sum it all up, while the replacement market is the dealers' opportunity, it will require the industry's teamwork. And after all, it is to everyone's benefit that the entire team get into the game. For manufacturers have their factories to keep busy. Distributors need this market worked to keep the flow of merchandise through their warehouses instead of sitting on the floor. The utilities need load building again to make their huge new investments in plant pay. The dealers need these sales to survive and prosper. The user, the customer, benefits most—from new, more efficient, better looking, better functioning labor and time saving and life enriching appliances.

Sixty-cycle engineers may think the power business has lost a lot of its romance—that most of the big problems have been solved—that there isn't the intrigue and the challenge of the old days. One of the West's most prominent engineers, N. B. HINSON, vice-president and executive engineer of the Southern California Edison Company, feels that distribution engineering presents the most pressing problems the engineer has yet faced, when he says

DISTRIBUTION CHALLENGES

THERE is still a lot of romance in the building of new hydroelectric projects in the high mountains or on the rivers. Steam-electric plants have a thrill in the high pressures and high temperatures which help to decrease fuel consumption. High-voltage lines and major substations intrigue the planner and the engineer. It is granted that all this is true. Unfortunately, however, when it comes to the distribution system there has not been that same dynamic appeal. Yet distribution has always offered a challenge—a challenge that has failed to produce the same responsiveness in the power engineer that the more glamorous problems of generation, supersubstations and high-voltage transmission have inspired. Specifically, the distribution system, with its overhead and underground lines running down the alleys, streets and highways, has not had the appeal nor the attention, investigation and over-all engineering study that it deserves.

This seems strange, too, when it is considered that here in the West at least 35% of system investment is in the distribution system, including substations—a major part, indeed. Today, and it will continue for a few years to come, we find that approximately 50% of the utility's annual budget must be for distribution facilities. Present distribution system loadings are away ahead of the engineer.

Let us briefly trace the history of the power business to show that there have been relatively few major advances in the distribution system since alternating current was introduced. With the introduction of alternating current, its widely advertised advantage was the use of 1,000 volts instead of 100 volts as was common to the early d-c systems. The use of 100 volts has slowly moved up until 120 volts is now practically standard in America. Shortly after the introduction of the alternating-current system, the primary voltage was doubled to 2,000 volts. This slowly increased with the stepping up of lamp voltage, until 2,400 volts became the nominal standard.

Let's See What Has Happened

Let us take a brief look at what has happened to the various pieces of equipment and parts of the electrical utility system since the beginning of the twentieth century. The efficiency of the incandescent lamp has improved from about five watts to less than one watt per candlepower. Now we have fluorescent lamps doing better than the best incandescent. As expressed in our Western terminology, steam generation has improved in efficiency from less than 100 kwh. per barrel of oil to more than 600 kwh. Water wheels cannot show such improvement since they had reached a relatively high state of development before the advent of electric systems. However, the efficiency was only in the order of 50 to 60%. Today modern turbines exceed 90% in efficiency. Long-distance high-voltage transmission lines had reached 30,000 volts. Now 230 kv. is the commonly accepted standard. Transmission at 287 kv. has had a very successful record and experimental work is going on at the present time with voltages twice as high.

What About 2,400-Volt System?

With all this change and improvement in generation and transmission, what has happened to the 2,400-volt distribution system which supplies the great bulk of utility load in America? Much like Edison's 3-wire system that doubled the voltage, the 2,400-volt system has been star connected for 4,150 volts. I do not know who should have the credit for this advance in the art of a-c distribution, but he certainly should be acclaimed as it is the only major advance in the urban distribution system in almost fifty years.

Present Status

There are now two large metropolitan areas that use 4,800-volt delta systems, and there are a number of 12-kv. or 13.8-kv. systems supplying underground network areas, but the great bulk of urban America is still being supplied with what is nominally called 4 kv. What the next higher universally accepted primary voltage standard will be is not clear at the present time.

Several utility systems of the West have adopted voltages in the 11- to 13.2-kv. class for urban distribution. The 11 kv. is a delta system while the other is a 7.6/13.2 kv.-Y system. One such system is designed to serve a residential load of 6,000 kwh. per year

per customer. It looks good but there is no unanimity of thinking in where to light in the next industry-wide voltage step above the old 4 kw. Some engineers even now want to by-pass the 7.6/13.2-kv. system and go to 13.2/23 kv. Y. On the other hand many engineers cannot yet see beyond their present 4-kv. distribution.

Secondary voltages are in trouble, too. We have had for many years the 120/240-volt, 3-wire, single-phase standard for lighting. With open delta or open wye primary, a 4-wire system was available for both lighting and power. Two hundred and twenty volts and 440 volts, three phase, have been power standards. Then there came into the picture the 120/208-volt, 4-wire, 3-phase star-connected system of underground distribution. This system is now being used for overhead secondaries and large commercial and industrial customers, also. Some engineers think they have an answer here. The 208-volt part of the system, however, has the industry in a dilemma. What to do about motor voltages? Two standard voltages, 208 and 220, or one that will be a compromise? Shall 440 volts be the higher power standard, or shall it be 550?

Shall we continue to load up primaries with capacitors? What of the switching problem? Shall we start applying capacitors to the secondary as well? These are other matters.

Where Are We Going?

All of these things are mentioned merely to show the complexity and the gravity of the problem. I am not suggesting the solution to all these distribution problems. Perhaps there are several approaches, depending upon conditions. But what I am saying is that the problems are pressing. A tremendous amount of capital is involved. If postponed too far in the future the expense of converting from 4 kv. to something higher may compare in expense with the multi-million dollar 50- to 60-cycle conversions made by utilities in the past.

The distribution engineer must somehow get out from under the immediate problems of the moment in making up for lost time during the war in desperation to catch up with loads. He must do some advance thinking and planning. Otherwise, service will deteriorate and the already high cost of distribution will rise even higher. Surely the distribution problem is a challenge.

Success of the electrical contracting industry is in its own hands. Greatest need is realistic thinking. It would seem that the profit system has disappeared from the electrical contracting business. It must be recognized that present volume is good—better than normal. We must learn to prosper with this business. A comparative newcomer in the contracting business, R. W. BEARD, vice-president and general manager of Scott-Buttner Electric Company, says in his analysis

SO THIS IS CONTRACTING

ECONOMISTS tell us that the business cycle has definitely turned downward. Commodity prices are breaking. Buyers are waiting for further declines. Businessmen are starting to retrench. Statistically, manufacturers' sales are off 9% and new orders off 12%. Inventories are at a peak and rising. Unemployment is in excess of 3,000,000.

Perhaps profitwise no single group has been hit harder than the electrical contractor. As have other businesses, he has experienced a tremendous wartime growth, moved from this into the volume market of reconversion and new plant construction. Now, with a smaller volume of business, but with volume still beyond prewar normal or what he may later expect, he finds it difficult to adjust his overhead, plant, organization and, most important, his thinking to the situation he finds himself in.

A review of bids on almost any job would seem to indicate that he has sought relief through only one channel —a futile struggle for greater and greater volume. This he has sought through reduction of selling prices to a point where profit has long since disappeared. In many cases it can be seriously questioned if any provision is made for overhead or even all costs. In other words, it would seem that the profit system that has done so much to raise our standards of living, and on which the economic structure of our country rests, has disappeared from electrical contracting.

Right to Profit Acknowledged

No buyer questions business' right to a profit. In fact, long-headed businessmen fully realize that profits are essential to the vendor. Sound sources of supply must be maintained. The answer therefore is strictly in the vendors' hands.

Business has long since discovered the dangers of price-cutting tactics. It has learned to sell quality, extra service, new features and reliability of the seller. It has learned to rely on these benefits to gain desired volume to carry overhead and win a profit. These same selling principles can be applied to electrical contracting, although such thinking is certainly not general. A comment on the present situation generally brings forth stock answers such as, "That's contracting," "It's been this way for the last 20 years," "It's too easy to get into the business." Certainly, with respect to this last comment a little education and selling can show both the prospective new electrical contractors and buyers alike that electrical contracting is a business requiring broad experience, knowledge of electrical equipment, plant, tools and finance.

It might be well to look at what the electrical contractor has to sell. Included will be: (1) a well planned job; (2) labor-saving equipment; (3) well-managed labor; (4) cooperation

with other trades and scheduling to insure over-all economy; (5) accurate material lists, careful purchasing at right prices and material on job as required; (6) quality materials and workmanship; (7) ability to see a job through in face of difficulties; (8) financial stability and ability to stand behind warrantees.

These are all factors worthy of buyer consideration. If presented continuously on a broad front they gradually will become better recognized. It should be remembered that advertised quality brands still are being bought at premium prices purely as a result of buyer experience.

Now if we agree that the contractor has a valued service to sell, its worth should be determined as in any soundly operated business. If proper estimating procedures are followed, the costs of materials can be determined accurately. Labor costs, although presenting more variables, are, through recognized cost data and experience, also subject to reasonably close analysis. Job expenses also can be clearly recognized. Then we have overhead and profit to consider. With the equation this is simple, why should bids apparently go below cost or vary as much as 100%.

Fallacious Thinking

Perhaps one of the contributing factors is a feeling that the present situation is temporary and unusual methods are warranted: that more and better jobs will come along if we can keep going, government spending will intervene, perhaps there again will be military preparations, another war. All such thinking must be exploded. It must be recognized that the volume of business available is good—better than normal—and we must learn to prosper with this business. There are, of course, many other forms of fallacious thinking such as:

1. There will be extras on the job (this gamble provides little justification for throwing away base profit).
2. It will be an opening with an important customer. (The idea being here to get some other fellow out—experience will show he usually comes back after the *price-only* seller has taken his loss.)
3. We'll get a break somewhere.
4. We always come out all right.
5. Gotta keep the gang together—must not lose my key men.
6. Work's scarce, the men will work harder. (It should not be overlooked that men sensing that work is scarce may try to make a job last.)
7. We're down to a tight working crew.
8. We'll save on material, the market's falling. (There are easier ways to speculate on commodities without taking the risks of contracting. Why not try the commodity exchanges?)
9. We can substitute.
10. Gotta big inventory I want to unload.
11. A fraction of overhead is better than none.
12. It's good to be busy.
13. We'll wear our competition down. (This probably comes nearer the truth than any. The only problem is not to get frayed with them. It is a grim inescapable fact that business can not long survive without profit.)

There are doubtlessly many other similar philosophies abroad. In addition we have:

1. Poor estimating due either to inexperience, insufficient or poor cost data or errors. It is apparent that, with a large number of contractors figuring each job, the chance of a faulty estimate appearing on each job is greatly increased.
2. Lack of knowledge of job costs permitting loses to continue.

In every community will be found small groups of serious-minded businessmen in the electrical contracting field giving their time and energy in an effort to find a solution to the problems confronting the industry. However, real progress will come only when their efforts receive broad support through recognition of the following points:

Cardinal Points

1. Today's volume of business available, as before stated, is well above normal. The contractor must learn to prosper with it or with even a lesser volume.
2. Rather than striving continuously for greater and greater volume at lower profits to carry overhead, the principle that a fair profit on every job is essential must be recognized. If it is necessary, overhead must be trimmed.
3. Each contractor must recognize overhead. He must know what his is and include it and a fair profit as well. Overhead in a well-managed contracting business is at a minimum when of the order of 15%.
4. It is generally recognized that lower prices will broaden markets and attract a greater share of consumer dollars. Nevertheless, the contractor's increment is too small to lead to any expectation that unsound low prices will in any way increase general construction volume. From this it must in no way be inferred that the electrical contractor's market cannot be expanded. There are today many fields in which he is not recognized and where, through selling, sound prices and service he can hope to gain a foothold. Here it might be well to develop the thought that the labor union properly operated is a helpful tool to the contractor. It provides a pool of skilled labor available to meet the widely fluctuating demands of his business. It should make possible his going after business in industries with permanent maintenance staffs operating inefficiently due to highly variable load factors. Labor should see to it that its wage scale makes this possible.
5. Sound business practices that have been developed within the industry must be supported and sold. This includes bid depositories supporting fair trade practices, where such are in operation. They benefit both buyer and seller. Too frequently contractors place the burden of sound decisions on the rules of such groups, implying criticism rather than support.
6. Where associations have been formed they should have 100% support of the industry. It is only by such representation that they can present the best thinking of the group to the public and to labor. When participation is limited, it leads to criticism from within the industry and from without.
7. Sound estimating procedures based on reliable cost data are all important. Education is in progress in many areas and improvement in quality of estimates can be expected.
8. Costing of a job is important. It is a check on estimates. It leads to better job management and takes wishful thinking, which may lead to further loss, out of the picture.
9. And finally it should be fully recognized that it is extremely hard to make a profit unless your competitor does. Prosperity has long been recognized as a mutual problem between nations, communities and industries.

Change Will Come Slowly

Change and correction will, without question, come slowly. It has been history that constructive forces in general only come into effect after great damage has been done. The best that can be hoped for is that, by education and planting of ideas, the damage can be minimized, the turning point reached sooner. The greatest need is realistic thinking and a will to do.

Success of the electrical contracting industry is in its own hands. The stakes are large and are well worth working for. All signs point to ever-broadening use of electricity in home and industry, expanding utility load and expanding distribution systems. Business cycles will move up and down but subject to these corrections, the electrical trend is always upward—the electrical roots of prosperity grow deep.

Just when should the utilities begin load building again? It is a question the manufacturers, wholesalers and dealers have asked while the utilities frantically have worked to build up their facilities to serve. Recently made the general commercial manager for Southern California Edison Co., Ltd., and with a background of realistic dealing with the complexities involved in supply of power to the tremendous industrial growth of the area, GEORGE N. HAWLEY presents

THE CASE FOR LOAD BUILDING NOW

IN the realm of business administration, it has been aptly said that no problem has ever been completely and finally solved—it merely recurs again and again in one form or another. Thus a business is formed and financed; plant is constructed, manned, operated and maintained; products or services are produced and sold. And the problems of refinancing, reconstructing, remanning, operating, maintaining, producing and selling begin immediately and go on indefinitely—so long as the business progresses.

It is true that from time to time the emphasis shifts from one complexity to another as one factor or another assumes immediate importance, but the troubles of the other areas still remain—so long as the business continues. It is true also that the transition from one problem area to another is seldom sharply defined in time. Difficulties originate, develop to a peak and recede in cyclical fashion sometimes following, sometimes overlapping, one another. No sooner is one factor placed under control and caused to decline in importance than another is in the ascendency and must presently be dealt with vigorously.

For these reasons it is seldom possible to divorce one problem of a business from all others and to treat it as an isolated factor without relation to the rest of the business. Thus it is difficult to inquire of the nature of the major "commercial problems" of the electric utility business without viewing them against the background of the complexities of the utility business as a whole.

For the past eight years the electrical utility business, in common with most others, has been heavily preoccupied with the perplexities of supply. So pressing has been the need for new construction that such subjects as maintenance, finance and sales, though still present, have had to assume secondary importance. While these problems of supply have by no means attained conclusive and final solution, nor will they ever, their place as Number One on the utility list gave way some time ago to a new set of considerations in finance—those of giving permanent form to the capital requirements arising out of the new plant. As the transition proceeds, less and less is heard of steam pressures and superheats and more and more of debt-equity ratios and money costs. Finance now holds the center of the utility stage.

The first part of the financing difficulties have been met by the issuance of debt securities. The second phase of financing looking toward the equity market is now under way. Here the prime consideration from the investor's standpoint is the long-time outlook for the progress and stability of the business. The greatest asset that a company can have when attempting to accomplish equity financing is a bright future, secured as well as may be by the plans of progressive and forward-looking management aware of the necessity of continuous performance in building, selling and operating at highest possible levels.

Simultaneously with the necessity for additional equity financing, the levels of general business activity are slowly sinking. As if to confound the best efforts of management, right at the time when a bright future is the prime requirement of a sound financing plan, the future of the industry becomes involved with postwar "readjustment." The seriousness of the situation so far as utilities are concerned is not the direct result of the business decline alone. Rather it is the result of the compounding of the problem by the necessity of raising money to carry on the business in the face of lowering levels of business activity, and with the exponents of Socialism actively aiding and abetting the confusion and trying with all their might to make our progress more difficult. The fond hope of those who would eliminate private enterprise is that we have been so crippled by discriminatory competition and taxation and by the enormous demands placed upon us, that capital will be shy of assuming risks in our field of enterprise.

More and more, it would seem that utilities need to decide what positive action they propose to take:

First, with respect to the reinforcement of public confidence in the enterprise.

Second, with respect to the enlistment of more active participation in the furtherance of our major objectives on the part of all employees of the industry.

Third, with respect to the long-term development and extension of markets.

With obvious prejudice but with a viewpoint born of experience, your observer believes that a good dose of old-fashioned load building administered right now would purge the industry of some of its difficulties and brighten up the outlook immeasurably. More than any other single factor, it would serve notice on the world that we mean to back up the acquisition of new plant capacity with insurance of future load. It would be the outward justification of our faith in the curative powers of the competitive system of enterprise. It would be the rallying point of our colleagues within the industry and the basis of a strong natural alliance with manufacturers, distributors, dealers and contractors. It would be the positive core of a sound public relations program. It would furnish the unifying influence of a mighty "cause" and have the most salutary effect on our own employee relations. In short, it would be the most potent influence we have for solidifying the friendship and goodwill

of all with whom we deal. Looked at in this light, a sound load building program would do far more than just add load and revenue to our lines. That sounds like a mighty big order, and it is. When you come to think of it, there are precious few other courses of positive action which may be taken.

The actual makeup of the load building program of course should be adapted to the peculiar needs of the utility involved. Studies should be made to determine the load classifications upon which special emphasis is desired. These will vary according to the type of territory served and the particular circumstances governing the desirability of the load. In several respects, however, all good load building programs will be much alike:

First, they will be soundly conceived from a public relations standpoint. Aggressive cultivation of the market may be made one of the best practical ways to generate good public relations. Sales forces are our major public contact. There is purpose and point in their calls. Services are rendered, difficulties straightened out, advice and assistance given, whether or not additions to load are made. Time and effort thus is never wasted but may be made productive in one way or another.

Second, they will stress the active cooperation of all elements of the industry from manufacturer to installer. Without the conscious and continuing cooperation between the utility and these agencies, no lasting progress can be made. One of the focal points of our program is to get into the hands of consumers machines or devices which utilize electricity. In the majority of instances, the utility will not sell these devices directly. The necessity for a close operating hookup with the agencies who do sell these devices is apparent.

Third, we need to enlist the active support of all utility employees. They can become the champions of electrification—in the home, on the farm and in the factory. Fortified with facts and information, they will have a cause, a mighty reason for doing their daily jobs well. Morale-building in the abstract is a flat thing. Tie it to a real urgency of action and it takes on life and purpose. Participation on the part of each individual is the key to results here. The unifying influence of our load building program can be most helpful in this respect.

Fourth, the customer must be the major beneficiary in the whole program. Wise and efficient usage of electricity by the customer is our primary objective. Our product, electricity, is a double-barreled service. Its primary application in industry and agriculture has resulted in increasing levels of production and consequent rising standards of living. In the home it has brought a comfort and convenience which is the practical mechanism by which we realize those higher standards. Thus our industry serves both ends of the human problem—living and making a living. While not unique in this respect, our industry is one of the few with such wide connection with the fundamentals of human existence. Our responsibilities are correspondingly great. All of our engineering achievement, all of our financial and legal talent, all of our operating skills are employed to bring about these two simple results for our customers—better living and better means of making a living. To accomplish this is the basic philosophy of the power business.

From a viewpoint of twenty years close contact with utility marketing, your observer believes that a sound load building program is indicated for the industry beginning right away. Undertaken now, it should be good for the following:

1. The industry as a whole by indicating to the investing public the long-term plans for expansion of markets which should assure future growth and stability.

2. The individual company by assuring maintenance of high net revenues to keep new plant loaded and earnings high enough to pay for the new investment.

3. The employees of individual companies by furnishing a new goal with ample participation on the part of all to regenerate the utility spirit.

4. Last but most important, for the customer, who will have available the latest in devices and machines for better living and making a better living.

TV PROGRAM PRESENTS ELECTRICAL LIVING

Live demonstrations on electric cooking started as regular half-hour telecasts over KDYL-TV in Salt Lake City late in April, under the sponsorship of Utah Power & Light Co., the first utility in the West to originate programs of this kind. From an all-electric kitchen Miss Evelyn Hansen and Mrs. Vilate White, home economists of the utility, give visual presentations on various uses of electricity for the home each Wednesday afternoon from 3 to 3:30.

Utah Power & Light is backing this program with the idea of creating television sales for dealers as well as getting customers into the stores. To publicize the "Better Living Electrically" show, the utility has provided dealers with large window cards calling the public's attention to the program, inviting them inside to view it.

Television cameras are focused on Miss Evelyn Hansen, home economist of Utah Power & Light Co., who presents the company's half-hour Better Living Electrically program, which is televised each Wednesday afternoon in Salt Lake City, and features visual demonstrations of various uses of electricity in the home

Selling is Theme of Northwest Conference

MORE business, new business and the right to do business occupied the thoughts and initiated the programs of the Business Development Section, Northwest Electric Light & Power Assn. at its annual sales conference at Salt Lake City, May 9, 10 and 11. The 175 representatives of Northwest utilities, manufacturers, distributors and dealers looked out from beneath overhanging clouds of Socialism for selling sunshine. If there is any hope for the industry's survival, one got the impression, it will come from out-selling bureaucracy in delivering better living electrically. J. F. McAllister, Utah Power & Light, Co., chairman of the section, cited the pioneers who had made many of the first developments in Utah Valley as examples for the new pioneering in the industry necessary today.

W. L. Thrailkill, association president, assistant general manager of The Washington Water Power Co., Spokane, reviewed accomplishments in Northwest utility growth during the last decade but noted a change in the trend recently, with sales of ranges and refrigerators down 40%. He intimated many companies will take another look at their budgets in midyear. This, he said, was a new challenge, but the industry had always accepted new challenges and met them. In the Northwest, the arena in which the struggle between those who would socialize and those who believe private enterprise is essential to freedom, the challenge is one of selling. Initiative in selling, said Thrailkill, is only found in private enterprise.

Quoting Sir Ernest Benn, English economist, in a book, *Governed to Death*, Dr. Adam S. Bennion, vice-president, Utah Power & Light Co., recited the conclusion, "We are witnessing in Britain the greatest psychological blunder in history," as a description of the results of Socialism. Dr. Bennion declared the choice for the people today was between democracy and being swallowed by a socialized state. After describing the approaches used in selling the people on the nine power authorities which would become super governments to blanket the nation, he said it was up to business to get the men in Washington to see that river development is possible by government, but that business can distribute power produced as a by-product. He urged that employees, stockholders and customers be made aware of this choice. "I mustn't interfere with your selling of ranges and refrigerators, but you won't have much opportunity to sell either if they sell your birthright," he concluded.

The business development executive should be concerned with economic conditions and trends, Fischer Black, editor of *Electrical World*, told the opening session. Economic trends not only affect business and sales, but have a strong effect on customer relations. Black then showed by means of charts the tends in cost increases for capital improvements because of labor and material prices; operating expense

Williams McAllister

trends; expected tax increases and increased maintenance. Against these factors the commercial man must make unprofitable loads profitable, convert small customers into bigger customers, regulate demands in order to develop the maximum use for the minimum cost.

There is more gold in electric service than has been mined in a hundred years in California, said Harold H. Green, lamp department, General Electric Co. And in electric service, the lighting load is the mother lode, since 40% of utility revenue comes from lighting. Instead of diminishing, the lighting load is expanding. Green then used as an example the Planned Lighting program for the home as a measuring stick and set a goal of four times as much lighting in the home as used now. Such an increase would mean 173% increase in connected load, 175% increase in kilowatt-hours, 125% in lamp bulb renewals and two and a half billion dollars in lighting equipment and installation. Every branch of the industry has a stake in this program. He reviewed the typical two-bedroom home, originally wired for six bulbs, and showed increases in 1925, 1934, 1940 and 1945 ideals in home lighting. The "Sunshine Home" would have 26 portables, 23 fixtures and a connected load of 5,500 watts. With home lighting advisors non-existent except in rare instances, he advocated training of new people for this job, which would establish 500 foot candles as the practical limit for home illumination.

Not in a long time has the association been given such a penetrating and debunked analysis of trade association value as that presented by Robert Wilkinson, executive secretary, Inland Empire Electrical Dealers Assn., Spokane. That associations can justify their existence fully on business reasons without necessity for considering them paternally as mediums of good will, was proved in his concise analysis. In the sales and service field, as well as in that of public relations in its largest sense, he showed how the association fulfills its purpose. Wilkinson then explored the paternalistic type of association organization. It is not justified today, since the appliance industry itself is a business of self-respecting proportions and a paternalistic attitude by the utility is stultifying. The other method is one in which the dealers take an active part in the planning and the association's scope recognizes the need to help dealers make their business stable and profitable. (The entire paper will be published in a later issue.)

James T. Coatsworth, commercial director, Edison Electric Institute, former Coloradan, prefaced his description of EEI's newest commercial activity for electrical living by discussing some industry trends. The supply of appliances is "running out of the ears" of manufacturers now. The LP gas and the gas industry campaigns for the consumer dollar cannot be taken lightly. Therefore it is necessary to revive prewar sales efforts and techniques. The all-electric kitchen program, with its slogan, "Of Course, It's Electric," is designed to reverse the trend and to make it go toward all-electric living. The slogan can be used to answer all such questions as—is it cool; is it fast; is it better; etc. "Of course, it's electric." He then de-

Davis Bender Olson

scribed the advertising materials, booklets, films, etc., available from EEI and said that "E-Day" is June 1.

By getting the entire audience to sing *Farmer in the Dell*, George W. Kable, editor, *Electricity on the Farm*, used it as a theme to show that the farmer, whom he called a free enterprise man from choice, is married to his farm and must make it a business success. The farmer, who represents almost 20% of the population as opposed to 90% in pioneer days, is able to produce the food and fiber because he has taken on much machinery. Kable advocated assisting the farmer not only with his mechanical problems but with his other over-all farming difficulties in soil erosion, brooding, marketing of his crops, etc. The farmer needs much technical information. The job of serving the farmer with new lines is going to be finished soon, but electrifying the farm completely never will be finished. He detailed many ways in which farm business could be enhanced and pointed to the importance of training the young farmer in 4-H and FFA, since all of them will either continue to be farmers or may find themselves as the businessmen in the future.

The responsibility for selling is that of selling *progress* from door to door, shop to shop, from factory to factory, from city to city, from north to south and south to north. "Selling progress —that is the responsibility of all of us who have a product or service to market." So said Sam B. Williams, manager public relations, Sylvania Electric Products Inc. "What characterizes best and most simply the difference between a free and a regimented economy? Isn't it selling? The one inherent quality of selling is freedom to make a choice. How much freedom does one have to make a selection when living in a controlled state? Is there a choice of store? Can the consumer dictate what the store should carry? Is there any price competition? Is there ever enough?

"Wherever you find salesmen you find freedom and the quality of that freedom is in direct ratio to the quantity and quality of the selling.

Leading into, of all things, adequate wiring, by means of a very dour outlook on world, national and industry affairs, and the fairy story of *Clever Elsie*, N. J. MacDonald, vice-president, Thomas & Betts Co., swung into what a tremendous market is to be found in the 72 million outlets which lead the parade of appliances, equipment, power lines, generators, etc., to supply the 28 million houses which will be built. He termed the adequate wiring program as one exactly tailored to increase good business relations and admonished the industry to quit talking to itself but to inspire everybody, from the office girl to the lineman, all the clerks, accountants, engineers, truck drivers, etc., to tell their friends and neighbors. If all can be made to see the truth—that their job, their security, their advancement, depend on the outlet—then the more they help to sell the better their future.

First utility in the West to use television programs on home service, the Utah Power & Light Co. arranged to receive its afternoon program Wednesday so that the entire conference could view it, as the TV audience views it. Evelyn Hansen and Vilate White, working in an all-electric kitchen, were seen preparing a meal and discussing the layout of work centers in a kitchen. Following this, Sidney S. Fox, president, Intermountain Broadcasting and Television Co., spoke of the value of television as an advertising medium and predicted that it would soon become the most important medium in all advertising.

At the beginning of the Wednesday general session, awards were made to the winners of the two contests conducted by the section during the past year. Homer Bender, Washington Water Power Co., announced as winners of the adequate wiring jingle contest the following: First, A. A. Hodges, Washington Water Power Co., Spokane; second, D. Gainer, Puget Sound Power & Light Co., Seattle; third, E. S. Rippon, B. C. Electric Railway Co., Vancouver; fourth, F. E. Buckman, Pacific Power & Light Co., Portland; fifth, Albert J. Dabb, Utah Power & Light Co., Odgen; sixth, Miss Pat Hickey and Miss Gwen Reeder, Portland General Electric Co., Portland; seventh, Pat Beck, California Oregon Power Co., Medford; eighth, Carol Bulow, Telluride Power Co., Richfield, Utah.

Glen Bergey Olson

D. O. Bergey, Pacific Power & Light Co., called M. S. Glen, Pacific Power & Light Co., to the platform. Glen won a trip to the conference for his data sheet on an all-electric laundry. Second prize winner was R. W. Racine, B. C. Electric Railway Co., and honorable mentions were given to E. M. Atwood, Washington Water Power Co.; C. E. Lewis and W. A. Newman, Washington Water Power Co.; W. A. Gish, Pacific Power & Light Co., and L. S. Roof, Portland General Electric Co.

J. Homer Shaw, Utah Power &

Light Co., was announced as the chairman of the data sheet committee, succeeding Bergey for the next year.

The seven concurrent meetings of bureaus and committees were held on Monday afternoon and Tuesday morning. Reports of their activities follow.

Adequate Wiring Bureau

O. C. Small and John Bigge of the National Adequate Wiring Bureau, New York, brought national experience and viewpoint to the small but earnest Adequate Wiring Bureau meeting, under R. Hall, B. C. Electric Co., as chairman. Homer Bender, Washington Water Co., past chairman, told the results of the jingle contest and discussed the possibility of continuing it among the families of employees for next year's contest. Other things discussed by the committee were ways and means to maintain continuity of the promotion, promotion in the new homes of the 100-amp. objective and ideas for selling increased wiring in old homes. Participating were Guy

Platt Hoffman

Davis, Pacific Power & Light Co.; W. W. Corcoran, Puget Sound Power & Light Co.; C. W. Coleman, Utah Power & Light Co. Suggestion was made by R. R. LaMar, Portland General Electric Co., that wiring methods and costs be made a study not of this bureau, but of the engineering section. Dell Shumway, Utah Power & Light Co., discussed the relay system and its possibilities, tying in with the adequate wiring program. General discussion ensued on the value of contractors' associations and the participation of other cooperative groups in the advocacy of the program.

Commercial and Industrial Bureau

Harold H. Green, lamp department, G-E, Nela Park, went into some detail of the planned lighting program and its value to the electric utility, at the opening of the Commercial and Industrial Bureau meeting, under Chairman Joseph C. Platt, manufacturers representative, Seattle. He also showed a new film on industrial and commercial lighting. K. E. Hollingsworth, chairman of the lighting committee, was unable to attend and Carl Hoffman, Washington Water Power Co., presided in his place. Jerry Collins, Portland General Electric Co., went into detail as to a training program for lighting salesmen and gave suggestions as to where to obtain specialized assistance for such training. Robert Bardsley, Pacific Northwest engineer for Sylvania Electric Products, substituted for S. B. Williams, who had not yet arrived. He discussed new light sources and developments. Under load molding, A. H. Greisser, Pacific Power & Light Co., reviewed some of the methods used in the shortage period of the past winter to change the peak load times and to balance loads in order to carry as much capacity as possible. M. S. Glen, Pacific Power & Light Co.; C. A. Manson, B. C. Electric Railway Co.; Albert Gruber, Washington Water Power Co., and D. A. Runyard, California Oregon Power Co., each recited his own experiences in this regard. On the second morning J. Homer Shaw, Utah Power & Light Co., led the group through the kitchens of Hotel Utah, after a description of the equipment by E. N. Christopherson. A paper on commercial water heating applications was presented by R. A. Hogg, Idaho Power Co., and John D. Scott, Portland General Electric Co., told of a novel application of high-frequency heating in gluing of laminated timbers. The data sheet committee, D. O. Bergey, chairman, presented M. S. Glen, winner of the data sheet contest, with honors for winning the contest. A trip to the convention had been the reward. There had been 19 contributions and the contest is to be repeated again next year. The data sheets are published in ELECTRICAL WEST.

Electric Home Bureau
Indoor Climate Committee

The program sponsored by the Indoor Climate Committee centered around the heat pump. U. G. Smith, a contractor from Portland, who has had considerable experience with heat pump installations, described some of the economic and engineering problems involved with this latest heating device. Smith summarized the position as follows:

1. The heat pump is still in the experimental stage—much yet needs to be learned about heat sources.

2. The heat pump as now installed is a modified piece of commercial refrigeration equipment and as such lacks refinements called for in the heat pump application—probably the most important one being the need for a significant reduction in the noise level produced.

3. Its first cost is still much too high—only customers building homes costing in excess of $20,000 can consider the installation.

R. A. Hogg, Idaho Power Co., and H. B. Swaner, Utah Power & Light Co., described installations in their territories and with Smith formed a discussion panel bringing out many points of interest.

Kevin T. Cadigan gave further data on the Portland General Electric Co.'s continuing electric house heating tests. While not conclusive, the general deductions seem to be that, in spite of the very cold winter just past, there was no increase in the house heating peak demand this last winter as compared with other winters.

C. A. Manson, B. C. Electric Railway Co., was chairman of this session.

Home Service Techniques Committee

In addition to the traditional work of home service departments, the plus activities came in for a great deal of discussion, under Louise Gronnert,

Green

Pacific Power & Light, chairman. The Home Service director was cautioned that the extra or plus activities are becoming increasingly important to the utility companies and to the communities which they serve.

An active part in civic affairs through leadership has become a must for the home service girl. She is a natural for the job through training and experience and, because of the type of work she does, her influence is felt in some manner in the home life of every member of the community, Mrs. Gronnert declared.

During the conference, much discussion was placed on the value of developing the home service activities among youth groups such as 4-H, Camp Fire, Scouts, high school household administration and home economics classes.

Cooperation with manufacturers and distributors and dealers points to appliance shows, cooking schools and frozen food schools beginning immediately. Television for the home service girl is no longer something in the

future; it is here—a potentially greater influence in changing the habits of residential America than most people have stopped to realize. Interesting facts concerning the necessity of approximately one hundred per cent lighting wattage increase in areas where television is viewed and many technical changes in television cooking school technique must be studied (the acid test of the qualifications of a home service director may lie in her ability to cook since television schools tell all and show all).

Kitchen planning on a large scale and with a national promotion behind it was presented by J. T. Coatsworth of the EEI, and lighting promotion, which is the bread and butter of the electrical industry, was stressed by Harold Green of the General Electric Co., Nela Park, Cleveland. Green also discussed the CLM lamp equipment.

Marguerette Reinhart regional home economist from Hotpoint, discussed laundry equipment and laundry planning.

Lucille Ramirez, home service director for Washington Water Power, who recently received the Laura McCall award for outstanding home service departments, discussed the activities of her department which lead to the presentation of this award.

Papers on traditional home service activities were sent by Phoebe Gillam of Portland General Electric Co., and by Edith Rauch of Puget Sound Power & Light Co.

A television cooking school was presented by Evelyn Hansen of the Utah Power & Light Co. Miss Hansen also was responsible for the presentation of the displays sent in by all of the home service departments, showing their various activities throughout the year in picture and story form.

Leona Anderson of Idaho Power Co. discussed the fact that her traditional home service activities were so extensive that not a great deal of time could be given to the plus activities which she feels are necessary.

Ruth Larson of the California Pacific Utilities Co. was very much interested in the discussions of the other home economists since she is the newest member among the home economics group in utility work.

Electric Equipment in the Home

J. T. Coatsworth, Edison Electric Institute, gave the electric equipment for the home committee, under G. B. Earl, Utah Power & Light Co., chairman, encouragement to get more home service women throughout the country. Effort is being made with schools to encourage interest in home service courses to attract girls in this field. He discussed the promotion of the all-electric kitchen to combat LP gas, and indicated a sales trend favorable to electric as compared to gas ranges. One out of seven homes now cook electrically. The first month in history, April 1949, the kilowatt-hour rate nationally dropped below 3c for residential use, to 2.99c.

Coatsworth Wilkinson

C. E. Markley, General Electric Co., Schenectady, discussed means of controlling water heating load. He mentioned carrier current as first used to control street lighting circuits and later used for water heating. The average water heater adds approximately 500 watts to the peak, which in turn represents $150 of capital needed for line and distribution facilities.

Marguerette Reinhart, formerly Idaho Power Co. home economist, now with Hotpoint, covered the subject of the complete home laundry. She mentioned a recent buyers' strike which manufacturers had been able to avert by additional advertising and, in some cases, reduced prices. She reported that during the past three weeks buying had been reestablished and faith improved.

A. W. J. Smith, customer service manager, B. C. Electric Co., Victoria, gave a concise and complete coverage of the television situation, with some particular reference to the Canadian outlook. With government operating the radio system in Canada, the prospect for television is very remote. It is not interested in establishing itself, nor will it allow private industry to establish stations. A. S. Gilbert, sales promotion director of Idaho Power Co., described the various sales promotions and programs conducted in that territory by his company. Papers were also received from Paul R. Bishop, dealer coordinator, Portland General Electric Co., on the automatic home laundry; water heating by G. L. McDonald, sales manager, Puget Sound Power & Light Co., and "Taking the Drudgery Out of Farm Living, of Electrical Equipment for the Farm and Farm Home," by Walter Olmscheid, assistant district manager, California Oregon Power Co. at Roseburg.

Rural and Farm Bureau

R. E. Gale, Idaho Power Co., told of the value of applying farm chemurgy in the respective utility areas, an idea to bring new money, new industry and employment into the areas served. Arthur Mayer told of Washington Water Power's program to work with 4-H and FFA groups, with prizes for good projects, recognition luncheons for leaders, rural electrification manuals for distribution. He said it was good for everyone in the community to be interested in farm use and to help with club programs.

Henry Falkner, Westinghouse, pointed out his company's farm family night program as one which takes the dealers equipment to a nighttime show, inviting farm families to the show and demonstrating equipment, providing entertainment, offering prizes and giving out helpful information on the use of electrical equipment in the farm home and on the farmstead. "The day of specialty selling is here again. We must stress the advantages and benefits of our particular products," he said.

R. H. Gram, B. C. Electric Railway Co., said the farm equipment dealer can be a strong link between the utility and the farmer through the help of the utility field worker. If he interprets opportunities to the dealer, he can supply the pioneering attitude, develop an appreciation of adequate wiring and give engineering help and guidance.

J. W. Martin, Idaho State College, exhibited on large bulletin boards the publications of the Northwest agricultural colleges and listed 25 research programs upon which they are working. George Kable, editor, *Electricity on the Farm*, recited various sales promotion activities of other utilities, such as experimental farms; 4-H leader training groups; acquainting of all utility personnel with new farm equipment uses; surveys on actual use of equipment on farms; combined dealer and farm winter meetings to explain use of equipment and get farmers suggestions, and suggested helps to the farmer to do a better job, and in this way help the utilities.

Rate Research Committee

One of the subjects which received considerable discussion at the meeting of the rate research committee was a paper on "Residential Water Heating Control" by G. H. Pike of Washington Water Power Co. Walter Hendron, Utah Power & Light Co., presided. The paper showed that, where peak power

costs are above approximately $5 per kilowatt-year, control becomes economical and that fewer complaints are received from customers where the bottom element only is controlled. General discussion brought out the fact that the customers should be convinced that satisfactory controlled service can be had with heater installations of adequate capacity. Several manufacturer's representatives were present and discussed latest developments regarding control equipment.

Another paper presented was on residential load characteristics. In the absence of actual tests, a mathematical approach to the problem was prepared by Dr. H. L. Purdy of the British Columbia Electric Railway Co. Discussion brought out the fact that residential rates were designed in the past for average loads confined to reasonably narrow limits of size and load factor, and that the introduction of many new home appliances has changed the pattern of residential loads so that kilowatt demands and energy consumptions are becoming much larger and load factors are becoming lower. Result is that rates designed for average loads of the past are becoming inadequate for these large residential loads. It was brought out that many companies are including a demand charge in residential rates to be applied to measured demands in excess of a definite number of kilowatts.

Manufacturer, Wholesalers, Dealers and Contractors Bureau

In the absence of Walter Potter, Charles Morrison, district manager, Canadian General Electric Co. at Vancouver, took the chair.

Carlos W. Stone, manager of the Intermountain Electrical Assn. in Salt Lake City, opened the panel discussion on local electrical associations as "promotional and stabilizing influence in the industry." The following important functions necessary to a good association were brought up:—(1) public relations—selling industry to the public; (2) trade relations—as between manufacturers, dealers, utilities and contractors, etc.; (3) market research — issuing continued market for industries goods; (4) uniform accounting and taxes; (5) exchange of ideas and services; (6) democratic management—delegation of responsibility to individuals within the organization; (7) approval of programs so that good turn-outs are assured; (8) the joint promotion for maximum effect.

Robert Wilkinson, executive secretary of the Inland Empire Electric Dealers Assn. in Spokane, said that greater emphasis is necessary on the fact that the dealers' problems are the problems of the industry and, therefore, should be closely analyzed and every assistance given in solving them. The following were listed as major problems facing dealers today: (1) lack of knowledge in management; (2) lack of sales knowledge; (3) lack of public interest; (4) lack of capital; (5) price cutting; (6) supplier relations. Wilkinson pointed out that these problems could best be met by eliminating the fear of the market by publishing charts to show the rates to similar trends. Also, additional programs on sales training, cost ratios and compensation plans were necessary. And, as for answering the problem of price cutting, it would be necessary to convince dealers that, if they stop worrying about their effect on the public, the problem would almost solve itself. Wilkinson pointed out that perhaps the most stabilizing influence that an association has is in the pooling of experience by its members. This would take the form of distress boards, wherein more experienced dealers got together to assist the weaker dealer so as to lower the casualty rate and to stop harmful dumping.

How best to keep these associations active was then discussed.

Advertising and Publicity Committee

In a circle rather than with a round table, the advertising and publicity committee, under Frank Swearingen, Puget Sound Power & Light Co., went round and round on some of the rather pessimistic facts facing the industry.

The session, originally planned as a half-day meet with a chance to sit in on outside group discussions, accordioned out into three consecutive half-day meetings that ran the gamut of institutional advertising problems and display to promotional and legislative campaigns with a fillip of smooth, informative color films produced by member companies for consumer education.

Carried on informally, a round-table discussion of utility advertising problems and projects gave the meat of various company approaches to similar subjects. Roy Vernstrom, Pacific Power & Light, explained a straight-from-the-shoulder ad and rate campaign being waged against the PUD problem by PP&L in The Dalles, Ore. Gist: undercut PUD rates or meet them; take your losses now and stay in business. Randall Johnson, Washington Water Power, exhibited a series of company project displays designed to make friends for the company in schools, clubs and businesses. Idea: win the communities you serve by showing the company worth to them. Ralph Millsap, Portland General Electric, pointed out that utility ad campaigns should make their point while the point was still there to be made. There should be definite cooperation between management and advertising departments to speed up the advertising processes to the greatest good of the utility. Clem Stearns, Washington Water Power, underscored the value in making each employee of a utility a salesman for his own organization. Let the public know what your employees are doing in the communities served by the utility—through news stories, ads, clubs, organizations. Encourage your employees to be a useful part of the community in which they live and work. Play up their hobbies, activities. Use the company house organ for the personal slant as well as the utility picture. George Young, Idaho Power, explained a series of industrial brochures designed by the utility to focus attention on various communities and cities served by the utility. Point: the utility joins with the community in outlining the advantages of the specific community for new enterprise and expansion of present industry. Frank Swearingen, Puget Sound Power & Light, sketched the utility technique in presenting the company story in the recent Pacific Northwest peak power shortage dilemma. He stressed the use of all media—ads, radio, schools, talks, publicity, placards, etc. Most effective medium: radio.

Two excellent color films on individual company projects were viewed and enthusiastically received on the second day's agenda. Howard Walters, B. C. Electric Co., gave basic facts and figures on B. C. Electric's new 20-minute color film on its mighty, new Bridge River hydroelectric project. Screening of Washington Water Power's exciting snow survey film also done in color brought questions to Randall Johnson and Clem Stearns, for prompt answer.

A series of three of "We'd Like to Know" half humorous, half serious question folders dreamed up and edited by Kimball Jack of Washington Water Power were distributed at the general sessions to be filled out by all. Results of this tricky poll on the industry will be announced later.

It was the consensus that the Advertising and Publicity Section should meet more frequently—about every four months. Chairmanship for the next year's Advertising and Publicity Section went to Roy Vernstrom, Pacific Power & Light Co. Co-chairman is George C. Young, Idaho Power & Light. Next meeting was scheduled for Portland during the middle of September.

Bonus Plan Boosts Sales For Store

With a bonus pay plan for its employees plus a coffee shop for its customers, Hardware Mart, appliance and hardware firm in North Long Beach, Calif., combines two unusual features which contribute to the store's $100,000 monthly business.

Added incentive for boosting sales is offered through its bonus plan. Employees are paid the "going rate" or better as regular salaries. In addition 1% of the net profits is divided equally among its 24 employees.

At its new address, 5075 Long Beach Blvd., the 27-year-old firm capitalizes on the fact that it is located in an outlying district where eating places are scarce. Hardware Mart provides a coffee shop at the rear of the appliance section where customers can have a bite to eat while shopping for appliances.

Owner and co-owner of the store are Charles R. Dooley and his mother.

Hardware Mart, modern appliance store in North Long Beach, Calif., provides its customers with a convenient coffee shop. Employees are given a share in the success of the business through a bonus plan which the store uses

TV Receivers Shown

Les Hoffman, president of Hoffman Radio Corp., Los Angeles, introduced newly designed television receivers and radio-phonograph combinations to an audience of Hoffman dealers of the San Francisco Bay region at the Western Merchandise Mart, recently. Walter Epstein, San Francisco manager, acted as host. Hoffman claimed to be the first television set maker to have a 16-in. tube set approved by Underwriters', and to have stock for delivery immediately. This, he contended, was because the company had foreseen the trend and concentrated on 16-in. tubes from the beginning. The top deluxe set will sell at $945 and a 16-in. tube consolette at $595. Also shown were table models with 12-in. tubes in a new and more compact chassis to sell at $385 for 12-in. and $299.50 for 10-in. A matching portable table at $30 was also featured.

Hoffman has arranged with RCA to include a 45-r.p.m. changer. Hoffman offered them at $25 list for installation in sets already in dealer inventory.

Using a yellow safety glass filter, called Armorlite, the claim for this lens is that it returns the picture image from the high blue range, difficult on the eyes, to the middle yellow-green range, the area of most comfortable vision.

Hoffman also said that the experience with television in San Francisco had followed almost exactly that in Los Angeles. With a second station coming on the air in May, he predicted a healthier competitive condition and a greatly increased interest in video on the part of the public.

Interpreting the introduction of the long-playing and 45-r.p.m. records as a wonderful opportunity to revitalize interest in the record and phonograph business, Hoffman also announced as an accessory that can be put into the record compartment of his sets, a disc recorder drawer.

● British Columbia dealers and servicemen recently attended an all-day meeting of Moffat's Ltd., Vancouver, B. C. H. G. Darroch, general sales manager, headed the delegation of five from the Western headquarters of the company. H. R. Stewart, B. C. manager, was in charge of local arrangements. About 130 representatives of B. C. firms attended the sales conference.

● Tele-King Corp. of New York has appointed Robert Harris as television representative for California.

Jim Brown gathered his boys around him at Mansfield to inspect the new Corox range unit, while attending the Westinghouse appliance division national service conference there. J. A. Brown is Westinghouse field service supervisor, San Francisco. With him are, left to right: Paul Carson, district service manager, Wesco, Seattle; Alex Campbell, service manager, Savier's Electrical Products Corp., Las Vegas; Ned Johansen, service manager, Wesco, Salt Lake City; Jim Brown; J. H. McCarty, district service manager, Wesco, Los Angeles; Louis Harris, service manager, Savier's, Reno; Noel Bourda, service manager, Electrical Supplies Distributing Co., San Diego; W. F. Schanz, Westinghouse field service supervisor, Seattle; E. J. Schmidt, district service manager, Wesco, San Francisco; L. L. Braden, Westinghouse field service supervisor, Los Angeles. It was the first national conference of the appliance division since the war ended

ELECTRICAL WEST

Sales Guide

FOR THE ELECTRICAL MERCHANT OF THE WEST © JUNE, 1949

MAKE THE MOST OF ROASTERS

SELL the **advantages** of electric roaster cooking and you'll sell the roaster. Take it out of the realm of being an appliance and make your customer visualize **what the roaster will do for her** — how it will make cooking easier, give her more free time, save her money.

As an opening wedge explain that with an electric roaster the housewife **can prepare an entire meal** for a family at one time. It stews, fries or roasts meats, cooks vegetables, bakes breads, cakes and pies to perfection. When she wants to bake only one dish at a time, the roaster is the quick and economical way. No worry about the expense of lighting a large oven for one hot dish—an electric roaster can be operated at a cost of only 1 to 2c.

And **the way it cooks foods** is important too. No water is needed. The natural juices are sealed in. Meats retain their flavorful juices. Vegetables retain their nutritive value.

Foods can be warmed over in a roaster without drying out. There is **no shrinkage** of foods when you cook in an electric roaster. This fact alone is an important saving on food bills. The roaster will **soon pay for itself** in the amount of food saved.

Think what a **timesaver** the roaster is. Once the housewife has put the food in the roaster she can leave the kitchen until her meal is completely prepared. The roaster eliminates the problem of watching, basting meats and stooping to tend to a meal. This means **more free time** for the housewife. Roasters come with removable cooking wells too — easy to wash, easy to keep clean — one more timesaver.

And still another advantage of cooking the electric roaster way is **its cleanliness.** Since it is electric cooking there is no smoke, no dirt or soot, no fire hazard. The housewife's kitchen will stay bright and clean.

No standing over a hot stove with an electric roaster. Heat is kept inside by insulation. Her kitchen is **always cool** and comfortable. This makes the roaster **ideal for warm weather cooking.**

And to top it all the electric roaster is **portable.** It is small and light, easy to move around or carry in a car. At home, on picnics, it will keep food warm for hours.

DEMONSTRATE TO SELL

Ken Hampton

WHILE some stores report slow sales, the experience of those companies whose major selling effort is canvassing and demonstration report a good volume of sales and are operating at a profit.

Reports from successful dealers everywhere indicate one point emphatically; namely, in selling electrical appliances in 1949, demonstrations are a necessity. When they are used, sales immediately pick up and stay up almost in direct proportion to their use, both productwise and by salesmen.

Salesmen who use both store and a follow-up home demonstration are outselling all other salesmen.

Many salesmen and dealers resort to price cutting because they are short on merchandising knowledge and initiative, only to have their prospect buy at full list price from dealers whose salesmen know their product and use their knowledge wisely to demonstrate it.

Complete sales presentations in the store should be made with the prospective buyer looking at, feeling and, if possible, seeing and hearing the appliance operate. We are often told that the electrical refrigerator, for instance, is so well known, so well understood and appreciated by everyone that it does not require a complete sales demonstration.

This is not true.

Refrigerator manufacturers today are giving their dealers one of the best dollar values to sell to the public that has ever been offered in any market.

Consider these facts. On today's refrigerators, the size of compressors is such that in many makes there is an 8-cu. ft. storage space in the same size cabinet that contained only 6 cu. ft. before. New insulation materials outrate the old insulation materials formerly used by 100%. Moist cold principles of preserving food are used in many models.

Remarkable changes have been made in interior design. Storage shelves are adjustable, vegetable and fruit compartments can be arranged in different positions—greatest of all changes is the frozen food compartment with which many models are equipped. Ice cubes freeze faster and larger evaporators provide greater storage capacity. These and many other facts, almost unknown by the public make today's refrigerators an outstanding buy.

Women have changed their food buying habits; they shop less often and buy more. This means they must keep more food in their refrigerators and keep it there longer. New refrigerators with larger interiors equipped with shelves that adjust or tuck away easily are yours today to sell to these thrifty modern housewives.

To sell successfully in 1949, your store promotions should present, demonstrate and sell these new product features to your customers. Your advertising and window displays should present them to your community. Telling them and demonstrating them in store and home will bring you not only sales and profits, but pride and prestige in 1949. Now is the time to bring your store's merchandising quality up to the quality in product and design offered by the manufacturers in their new refrigerators.

Do these things now—1. Carefully **study out** the **outstanding new features** on all the products you sell. 2. **School** your **sales force** in the proper presentation of these features to customers. 3. **Advertise** these new **features** in all of your advertising. 4. **Dramatize** these new **features** in your window and store displays. 5. Insist upon your salesmen **selling** and **demonstrating the features and advantages** of these new electrical appliances to save work and make life more livable for your customers, both in your store and in the customer's home.

This program will assure you not merely **meeting** but **beating** competition. Better selling is the best answer to price cutting.

ELECTRICAL WEST Sales Guide

News Letter

FOR THE ELECTRICAL MERCHANT OF THE WEST

June 1949 ©

Not the answer

Cut prices, liquidations, auctions and other desperation deals may have skimmed off a thin layer of half-and-half, perhaps, but despite big banners and screaming ads, these jitter offers aren't selling many appliances. The public doesn't trust 'em. Makes them wait to be sure prices won't go lower. Also they recall the orphans that failed in wartime and left them without parts or parents. So they are cautious.

Selling is

But real selling is getting slow-but-steady results. F'rinstance, a Denver dealer who advertises consistently, follows up leads closely, revisits former customers, says business is good for him. A salesman for a Peninsula dealer likes to make night home calls seeing husband and wife and reports a very satisfactory business. Others around them are complaining business is bad.

Beats the bushes

Far bigger crowds than expected are attending the series of electric cooking and freezer schools in San Diego County. Dealers say they are really buying ranges and freezers too. It is a cooperative selling program by dealers, distributors through Bureau of Radio & Electrical Appliances and San Diego Gas & Electric. It works.

Upside down case

Salt Lake City has a case in reverse that shows how crazy things can get. Four GI's with an appliance business went berserk on price cutting, evidently violated franchises and fair trade laws themselves but a smart attorney pulled a Vishinski for them, sued several big dealers and distributors, charging conspiracy to prevent his boys from getting merchandise, forcing them out of business. Pulled in national radio muckrakers on the publicity. The distributors individually say the boys can get merchandise whenever their credit is good; dealers say all they did was gripe--an American privilege. Whole case is still in a maneuvering stage.

Casts doubt

Fair trade laws got another setback in a New York liquor resale price case; not as bad as the Florida and Louisiana cases which tossed out fair trading all merchandise. Our Washington Bureau says Congress may go into the whole price maintenance situation.

Harder on business

Delivered pricing bogged deeper into confusion when the Supreme Court split 4-to-4 on the conduit case appeal. A business man who uses a basing point or delivered pricing system that produces identical delivered prices, with the knowledge that his competitors do likewise, is guilty of restraint of trade under the FTC act, the court ruled. Makes it easier for FTC to win cases.

Regulation W, our Washington office feels, is sure to die June 30 when Federal Reserve Board emergency powers end. Congress is unlikely to extend it. Will make possible reopening of installment contracts to add another appliance without down payment, extend the payments and reduce them. | Credit decontrol

Bendix is springing a brand new idea in automatic washers, one invented by Rand, which uses atmospheric pressure to squeeze water out of clothes rather than spinning it out. This cuts down moving parts and speed, simplifies production so that it will sell at $179.95. It is called Economat. Ads break June 6 all over the nation. | Radical change

Maytag is also about to spring the automatic washer it has been developing quietly and testing before release. | Awaited

Auto Equipment Co. of Denver held a home show of its own at the Shirley Savoy last month, first for its dealers from several adjacent states and then opened it to the public. Distributors for Norge, Youngstown, Emerson, New Home, Sunbeam, Simplex, Arvin, Knapp-Monarch and Eureka, there were attractive displays of each. At the dinner for manufacturers' people aiding the show, Ed Huff, sales manager, it was announced, was going into business for himself as a furniture agent, to be replaced by W. S. "Bing" Law, general sales manager of Norge. | Own home show

Next meeting of National Appliance & Radio Dealers Assn. is to be held at Hotel Sheraton, Chicago, July 10-11, coincident with the Chicago market. Theme is, "The Last Half of 1949 Will Reward Fighters," NARDA's last cost ratio survey shows declining dealer profits for the last half of '48. | Last half

Pot and Kettle Clubs will meet in annual convention at the Santa Barbara Biltmore, June 19-23. | Kettlers

Who says ironers don't sell? San Diego's ironer week, pumped by energetic Bureau of Radio & Appliances, got 8,000 women into dealer stores to take a personal demonstration and sold lots of ironers, built prospect lists for many hundred more depending on salesmen's follow through. Did this despite the breaking of television in San Diego from its first own station, a record breaking home freezer promotion and a competing home show. Next big sales conference of the Bureau is to be July 27; its own electrical exposition Nov. 25-30. | Roll up sales

New television models on the market: John Meck Industries is putting out a TV set with 7-in. picture tube, retailing at $149.90. Is also marketing a portable TV receiver with 7-in. tube at $169. . . Emerson has announced a 7-in. portable video set, model, 600, which lists for $179.95. Emerson is also shipping to its dealers a new model 620, console television with a 12½-in. picture tube. . . The first Westinghouse television console with a 16-in. picture is on the market. . . Garod Electronics Corp. has introduced a new line of large screen TV receivers, headlined by a 10-in. table model with a 61-sq.in. screen to retail at $199.95. . . Admiral's latest addition in television is a full length 24-tube plastic console with a 10-in. picture screen for $249.95. Three new video sets, two with 10-in. picture tubes and one with a 12-in. tube, have been announced by Motorola. . . Magnavox is out with a 16-in. metal TV receiver housed in a corner cabinet with a 15-in. speaker. | TV parade

Similar to the early days of radio when amateurs tinkered with crystal receivers, Sampson Electrical Co., Los Angeles, has cretaed a television workroom where amateurs can build their own TV sets. People look at appliances while waiting their turn at the workshop. — TV tinkering

Westinghouse has introduced a new television antenna designed for simple installation. Features interchangeable component parts so that a variety of antenna arrays can be constructed to provide the best installation considering signal strength, the number of stations and station frequencies. Fixtures are included for roof, window sill and wall mountings. — Tele antenna

Universal's new Cook-A-Matic waffle-grill has 80 sq.in. of cooking area, with two sets of aluminum cooking surfaces, two flat grids for toasting or frying and two waffle grids. An automatic signallite indicates preheating. — In twos

Markel Electric Products is distributing nationally its newly-designed portable electric Heetaire designed especially for farm usage in milk houses etc. Built-in thermostatic control operates in a range between 40 to 80 deg. Has a baked enamel finish, can be carried about by an insulated handle. Underwriters' Laboratories approved. — Farm heat

Time-Saver ironing cord stand, put out by Davis Mfg. Co., is designed for new irons with permanently built-in cords. Clamps onto the ironing board and floats the cord above the board; is equipped with a three-way outlet. Retails at $2.25. — Above board

Norge division of Borg-Warner is advertising a new refrigerator which provides built-in automatic defrosting to retail at $269.95. It is an 8-cu.ft. model with storage capacity for 27 lb. of frozen food. Has a fold-away shelf for flexibility in food package arrangement. — Refer model

L & H two-oven automatic electric range, made by A. J. Lindemann & Hoverson Co., is on the market now. Has four vari-speed and two 7-heat monotube surface units. Ovens feature automatic preheat oven temperature control. Has automatic time control and electric clock. Automatic oven light in each oven can also be operated manually. — Two-oven ranges

Appliance Mfg. Co. has reduced list prices by $10 on all models of its Duchess washers. Has just introduced a new model washer to retail for $99.95, with 10-lb. capacity tub, 19 gallons to the load line. — Down

Distributors throughout the country came unshaven to a series of Sunbeam breakfast meetings so they could test its latest model Shavemaster. In San Francisco distributors got a free shave at a breakfast meeting at the Palace Hotel, May 24. — Free shave

Monitor has cut the price of its 4 lb. Aerator washer from $69.50 to $49.95. Will shortly bring out two new models of the Aerator, one larger one with a power pump, and a twin tub model. — Reduced

Hotpoint learned from one of its recent surveys that brand names and maker's reputation are considered more important than guarantee of product. Only 5% of the purchasers of Hotpoint water heaters in the last 12 months were influenced by a 10-year warranty plan; 50% reported buying because of the company's reputation. So Hotpoint instituted a one-year warranty- reduced the price of the water heater $10. — Its all in a name

Associated Products Inc., manufacturers of the Akron line of electric ranges, ovens, griddles, hot plates etc., have announced price reductions on several products in their line. — Price drops

Odin Stove Mfg. Co., makers of the Beautyrange line of gas ranges, has entered the electric range field. Plans to have its new electric models on the market soon. — Add electric

L. C. Phenix Co., Los Angeles, is making an Airfloat rocker which conceals a 5-tube radio with built-in speaker in the headrest and control knobs located at the side for tuning. — Chair radio

General Chef, combination electric refrigerator and two-burner electric range, is now available in a 110-volt model, according to the manufacturer, General Air Conditioning Corp., Los Angeles. Both the refrigerator and range plug into any household circuit from one wire. — Plug in

By this fall Westinghouse expects to distribute nationally its new 6 cu. ft. upright home freezer with a storage capacity of 210 lb. of food. Freezer has three compartments, each with a separate inner door. Will supply an 80-page instruction booklet with each freezer. — Upright freezer

Detroit Vapor Stove Co. is reentering the electric range field with three models which it will introduce this summer. Two are full size models and one an apartment size range. — Back again

Acme-National Refrigeration Co. has supplemented its series of 3.5 cu. ft. refrigerators with a new 5.6 cu.ft. lowboy model at $199.50. Has 10 sq.ft. of shelf space. — Adds one

"Fortunes in '49" is the theme for the Western Summer Market, August 1 through 6 at the Western Merchandise Mart, San Francisco. The Western Gift, Stationery, Toy and Housewares Shows will be held July 31 through August 4 at both the Mart and civic auditorium. — Mart theme

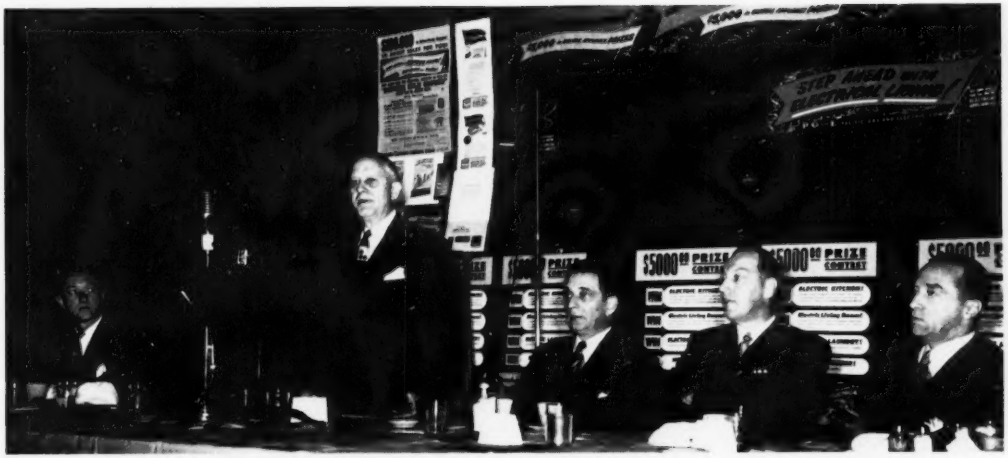
Shortly after San Francisco's second television station, KGO-TV, went on the air early in May, Hoffman Radio Corp. started telecasts of its new weekly program, Hoffman Hayride, a half-hour live talent show aired each Wednesday night. Free tickets to the program are being offered through dealer channels only. About 450 Hoffman dealers, salesmen and servicemen were guests at the premiere opening of the show on May 11. — Live show

Telechron announces an electric alarm clock to sell for $3.98. Styled in an ivory plastic case with brown dial and white numbers. Recently Telechron came out with a new electric kitchen clock at the same price. — Time pieces

To set off its two-tone plastic circulators Fresh'nd-Aire Co. is putting out a two-color display card which attaches to the models, explains fingertip control uses and safety features. — For emphasis

California state assembly has passed a bill prohibiting driving a motor vehicle in which a television set is visible to the driver. — No TV in cars

Television console in a Chinese design cabinet has been put out by Garod Electronics Corp. Has 15-in. cathode ray tube and "Tele-Zoom" picture enlarger, AM and FM radio, two-speed record changer. Retails at $1,095. — Oriental design



G. W. Baack Bennett Meyer Sloan Doerr

Dealers Support Bureau Campaign

Early reports on the Northern California Electrical Bureau's *Step Ahead with Electrical Living* contest indicate that the campaign is being supported actively by a large percentage of appliance dealers in northern and central California, with several hundred entries submitted in the first 15 days of the campaign, and a demand for more entry blanks to fill customer requests. The contest started on May 1 and will run through June 15.

In advance of the campaign dealers and wholesalers met for a Shove-Off Breakfast at the Western Merchandise Mart to hear details of the bureau's first postwar campaign.

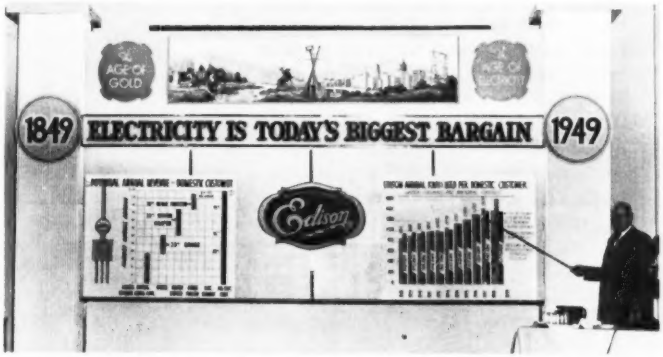
Following introductory remarks by A. H. Meyer, Leo J. Meyberg Co., vice-president of the bureau, Henry Sigvartsen, The Emporium, president of the San Francisco Unit of the bureau, urged all-out dealer support of the campaign.

Robert Sloan, sales manager of Westinghouse Electric Supply Corp., San Francisco, chairman at the breakfast meeting, introduced LeRoy Bennett, director of the bureau, who explained the advertising backing the campaign, the Pacific Gas and Electric Co. promotional material that is being used, and details of the entry blanks. Bennett suggested that the dealers give out special promotional material and new appliance literature with the entry blanks. He said that the blanks will be mailed back to the dealers so that they may obtain a prospect list from entries made through their stores.

On the electrical prizes that are being awarded Bennett revealed that the bureau will provide the necessary wiring for all the appliances and equipment in the electrical kitchen, and will pay for installation charges in the kitchen up to $300. It will pay installation charges on the lighting fixtures up to $75, and on the laundry dryer up to $50. The bureau has also set aside a $100 reserve to insure service of the installed appliances during the normal guaranteed service period.

Some units of the bureau, Bennett said, are using radio advertising and offering local prizes. The San Francisco Unit has appropriated $650 for prizes, including a window trim contest for its dealers and prizes for retail salesmen.

O. R. Doerr, vice-president in charge of sales, Pacific Gas and Electric Co., secretary of the bureau, was the final speaker at the breakfast on the subject, *Time to Go to Work*. Doerr stressed the strong and healthy condition in the area for appliance sales, the big market for sales in the replacement field. "It will take more ideas, better planning and work," he concluded.



Newly appointed Vice President Robert McFadden reviewed the commercial outlook of Southern California Edison at the company's management meeting before this colorful centennial background prepared by Ray Fisher's displaymen

ELECTRICAL WEST

I'm From Missouri—Show Me

MORE and more people in the Pacific Northwest are asking why President Truman, as a man from Missouri, doesn't insist upon the creation of a Missouri Valley Authority, instead of a Columbia Valley Authority. If such an agency is good for Tennessee and Oregon and Washington, why not Missouri? Could it be possible that the man in the White House knows that his own home constituents won't fall for such truck? Missourians have never been noted for their gullibility. Quite the contrary. In this instance it would appear that "I'm from Missouri, show me" presents an impossible obstacle. By implication the folks in the "colonial" Northwest will swallow the pap. Or will they?

Save Some of the Relics

MINDFUL of the popular song, *I Love a Parade*, we stopped on a street corner the other day to watch such a spectacle. One particularly nostalgic but nonetheless entertaining division, was a fleet of antiquated automobiles. Even though they represented a passing era, each was preserved in almost its shiny newness.

Quite by contrast we thought how the inexorable march of progress threatens to destroy many of the historical landmarks of the electrical industry here in the West. We recollected one of the early hydroelectric plants recently replaced by a new and modern station. It has been totally dismantled and its machinery sold off as junk. Another station on the same system is about to suffer a similar fate, having become outmoded after fifty years of usefulness. Many of the men who occupy high positions of responsibility in several different utilities learned to operate in its tiny control room.

Before the last of these old stations are junked, some agency should remove typical machines and preserve them for the enlightenment of posterity just as the old autos have been preserved. Perhaps what we should have is a Museum of Science and Industry on one of the university campuses. The least that might be done would be to set up a typical installation of old equipment in one of the newer stations. Such an exhibit would serve as a fitting monument to the pioneer engineers who designed, built and operated these early stations. Better still, they would remind the younger generation of engineers of the humble beginnings of this industry. Otherwise these youngsters might, like too big a segment of today's younger generation, take too much for granted.

Informed Employees

ENLIGHTENED managements more and more are taking their employees into their confidence. Witness the special annual reports designed to give workers a clear insight into company operations. Another example of this trend is the special training and indoctrination given new employees by many companies today. Recognition of the fact that a well-informed employee is a better employee is particularly important in a public service business. Gas and electric utilities especially have sensed the value of literate and informed employees in building good public relations. The degree to which this influence can be used is almost without limit.

Take the example of the San Diego Gas and Electric Co. Plagued by rising costs, expanding plant and increasing fixed charges, it must seek a general rate increase. One of the preparatory steps is a thorough briefing of all employees in the reasons for this action. Meetings and a special issue of the company house organ are used to tell the story. By the time an application is filed with the PUC and hearings start, the employees will be able to answer intelligently most of the questions the public might ask. Public relations are certain to be improved.

New Approach to Wiring

FOR years the people in the industry who have seen the need for and worked the hardest for more adequate wiring have struggled with the problem of dramatizing it, giving it glamor or appeal, making the public conscious of its need for ample wiring. Clever and ingenious as the demonstrations and displays have been, even the staunchest advocates have never felt they had yet found just the right

EDITORIAL VIEWS

approach, the key to public demand. Contests for slogans, jingles, etc., have excited only limited response and intangible results.

Perhaps the comparative failure to attract more than shallow interest in wiring has been due to one fact. Wiring is only a means to an end. It is not an end in itself. The wire is hidden in the walls. By itself it has no immediate association with anything a person desires.

Since the electrical living idea is the idea that is bringing home the devices, such as ranges, water heaters, laundry appliances, lighting, etc., as a means of attainment, why not tie adequate wiring into that package? Why try to sell "adequate" wiring as such? Why not sell the idea that a house is "wired for electrical living"? It will just *have* to be adequate. The wiring is needed along with the electric kitchen, the electric laundry, the planned lighting—to bring full *electrical living*.

The Code Revised

IN the past, if reports reaching the West are credible, the revision of the National Electrical Code by the Electrical Committee of 50 voting members and 50 alternates, was something like a national political convention, fights and all. Pressure groups held pre-meeting caucuses and voted in blocks. Argument from the floor was often lengthy and acrimonious. The master chairman, Alvah Small, presided with superb parliamentary horsemanship. And finally a new code emerged. But many feelings had been hurt, many fights lost and the compromised result pleased nobody much. As a result local inspectors blithely ignored the code and wrote one of their own.

At least so far, the revised procedure seems to have made code revision a bit more mental and less emotional. At the San Francisco NFPA convention, the Electrical Section code revision meeting cleared all the proposed revisions in a half day. The panels had already sifted the multitude of suggested revisions, the correlating committee had polished them still further. It left only approval or rejection to come before the NFPA meeting. The forum for discussion is the electrical inspectors' association chapter and section meetings, as it should be.

Perhaps the code will now be more acceptable in more cities, counties and states and really become what it is meant to be, a minimum standard based on safety, not politics.

Nursing Bottles Too?

EACH year the unions dream up new things to demand when contracts are renewed. As in the song in *Oklahoma*, "They've gone about as fer as they can go." For the electricians union in Los Angeles has demanded in its new contract a raise from $2.40 an hour to $3, vacations with pay, traveling time, hospitalization, shorter hours, double time for overtime, free parking. What, no didy wash?

FEW realize how personal and how tremendous is their stake in the continuance of the free enterprise system. It has produced more of the good things of life for every American, and more effectively expanded and protected individual liberty, than any other system the world has ever known. America contains only one-sixteenth of the world's population, and occupies only six per cent of the world's area . . . but it produces nearly seven sixteenths of the world's goods. Material things that most Americans take for granted—radios, telephones, electric lights and appliances, meat on the table, cake as well as bread—are luxuries enjoyed only occasionally, except by the privileged few, in other lands. Free enterprise is largely responsible for this record of achievement. It is also inseparably linked with all the other freedoms enjoyed by Americans. Together they stand or fall. The future of your company is directly related to free enterprise. Appreciating this fact, your company will never relax in its fight against propagandizers of state socialism, who seek to reach their goal through government ownership of first one industry and then another.—Kinsey M. Robinson, president, Washington Water Power Company.

Wicks Rankin

RMEL Conference Explores Three Phases of Industry

THREE phases of the industry, engineering, accounting, sales and promotion were explored and projected into the future at the April 21-22 Spring Conference of Rocky Mountain Electrical League, Plains Hotel, Cheyenne, Wyo., presided over by Harold T. Rankin, Public Service Co. of Colorado, president. In three parallel sessions the first day to study their respective fields of work, the group joined on Friday morning to review the plans decided upon for the future, to learn the present status of television on that slope of the Rockies, to "stump the experts" in a panel discussion of industry inter-relationships, and to hear former governor of Wyoming, Leslie A. Miller, tear the veil from the competition for federal power projects between the Bureau of Reclamation and the U. S. Engineers. (See *Saturday Evening Post*, May 14, 1949, p. 30.)

As a member of the Task Force of the Hoover Commission dealing with natural resources, Governor Miller showed the wasteful duplication in making of surveys, power construction and grandiose planning of these two government agencies in the field of public power. Not as employees but as citizens and taxpayers, everyone's long-time economic security is at stake, Ex-governor Miller said, and "our security is not very secure if the present trend continues. It isn't a job for the Republicans, it is a job for all of us as Americans to ask Congress to take back its prerogatives, recapture the initiative from the bureaus, and act in our interests as everyday common American citizens.

In reporting the plans of the RMEL for the future the following chairmen of committees discussed their programs. W. C. Porter Jr., engineering committee; H. S. Lanning, accounting committee; C. M. Pearson, sales and promotion committee, and T. M. Foulk, adequate wiring committee. Norman Wicks, National Adequate Wiring Bureau, having completed a tour of several cities in the RMEL territory, spoke on the national activity, advocating consumer education, employee training, use of home service and lighting personnel to tell the story, use of the league to present the united industry front and appointment of a man in each center to direct and coordinate the adequate wiring program.

Fred Morton, electronics engineer, General Electric Co., reviewed the television situation in that region. Station construction has been stopped by the freeze order. With five channels originally allocated to the region and seven applicants for them, the FCC has stopped work until interference can be eliminated between areas previously allocated.

G. B. Buck, vice-president and commercial manager, Public Service Co. of Colorado, led a panel of experts to answer questions the crowd had put. Among these experts were J. A. Bullock, Western Colorado Power Co.; J. W. Cryder, Colorado Central Power Co.; L. M. Burdick, General Electric Supply Co.; F. H. Dohremus, General Electric Co., Denver; Paul Pollock, Allis-Chalmers Co.; H. H. Lenhardt, Cheyenne Light, Fuel & Power, and Don Larson, manager, Rocky Mountain Chapter, NECA. The field of questions covered employee training, radiant heating, etc. Buck closed with an inspirational message on the opportunities and rewards offered in the industry.

Accounting Committee

The accountants first heard from the RMEL president, Harold T. Rankin, lighting director for Public Service Co. of Colorado. He stressed the importance of lighting as to quantity and quality and the color and reflection factors of office equipment such as desk tops, typewriters, etc., from the standpoint of the effect on the eyes and the working conditions of employees in accounting and business offices. Harry Adler, with characteristic humor, went through the AGA-EEI joint accounting conference questionnaire and interpreted the answers. Discussion brought forth the principles involved and the purpose of the review was to check on old practices which, once started, have been going on ever since, whether or not the reason for them has disappeared. The inertia or momentum of keeping useless things without analyzing whether the company is getting anything from doing so, is revealed by this type of study. Among things questioned are reports of various kinds. Are they just filed, or does anyone do anything with them? Another question asked was whether the signed application from customers was necessary. "Deposits" is another such question. Most agree that the cost is more than the losses would be without them.

Clifford M. Melby and Conrad Jacobson spoke briefly on Federal Power Commission reports. Since only one company in the region operates under FPC, the subject was not a pertinent one to most present. Robert M. Miller, discussing collection policies for 1949, noted that collections were more difficult. The easy money period seems to be over and it is necessary to scrutinize accounts more closely. B. B. Neel was unable to be present to discuss insurance, but the group discussed the various types of insurance required, such as fire, liability, fidelity, bonds, etc. The point brought out was that it is important to have someone in each company watch and scrutinize all insurance. Likewise it is necessary to make rechecks to see that adequate coverage is provided due to changes in cost of replacement. Many have placed insurance long ago and it is not necessarily adequate under present costs. F. W. Beier enumerated several types of pension plans common with the larger companies. Retirement of old employees, whose effective work is limited, without a regular plan is expensive on a direct cost basis. Discussion ensued as to what various companies do in the part-participation insurance and pension plans.

Sales and Promotion

Wiring and plumbing installation costs affecting sales of appliances had the major interest in the sales group led by C. Mel Pearson, Fred H. Voss, Phillips Music & Electric Co., Pueblo, led discussion on the handicaps. In Greeley, Colo., Thomas Spears said the Electrical League set up a clearing

house for customers to pay for range installation. The utility supplements with a small contribution for ranges and water heaters. The plumber problem in the Mountain States was reported to be almost a scandal. Exorbitant fees, which include the profit on the appliance as well as plumbing costs, and underselling after a sale is complete by offering free installation on the plumber's own appliances, were among the trade practices complained about. Combinations of circumstances, such as local ordinances rigged to protect the plumbers, union support of it, and restrictive requirements for master plumbers' licenses, all came in for criticism.

The All-Electric program for developing rural and semi-rural markets, was presented by P. E. Brookover, Public Service Co. of Colorado, and C. G. Henderson, general manager, Arthur G. Rippey & Co. The advertising and promotion which will be used to foster this All-Electric campaign, were displayed to the conference. Already advertisements on ranges, ironers, washers and home freezers have appeared, and the All-Electric kitchen theme was scheduled for May. A check on reader interest is being made by offering the All-Electric kitchen booklet for coupon returns, in order to determine in September whether the program will be continued.

C. Mel Pearson, Graybar Electric Co., Denver, talked of the dangers of price cutting among dealers and urged the selling of present values as good and of not waiting for months in order to buy cheaper. Manufacturers, it was said, should give thought to their methods of announcing cuts, and dealers to their own financial structures.

Engineering Section

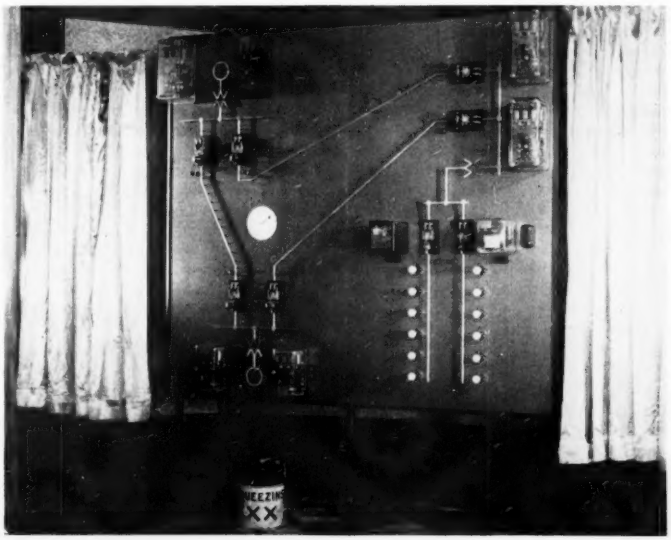
Sessions of the engineering section under W. C. Porter Jr., chairman, led off with an interesting review of the history and growth of the Cheyenne Light, Fuel & Power Co., by O. P. Reed, district superintendent. The company claims credit for making industry history in supplying lighting to a town. H. Colby Burns, Public Service of Colorado, presented a comprehensive paper on preventive maintenance of power apparatus, in which he showed how a well-organized program presistently applied can result in better service, lower maintenance costs and fewer emergency repairs. Detailed information was given on maintenance schedules, proper types of tests and the various pieces of special testing equipment now on the market. Selection and training of preventive maintenance men and the importance of keeping a complete set of records were stressed.

Grounding of transmission and distribution systems was the subject of a paper by C. H. Jensen, chief electrical engineer, Copperweld Steel Co., Glassport, Pa. His paper, available in printed form, presented an exhaustive treatment of the whole subject of grounding. Much information was given on resistance values for various methods of installing ground rods, including employment of soil treatment. The paper as a whole constitutes a compendium on the subject of transmission and distribution grounds.

C. G. Rumohr and T. L. Berri, relay engineers for the Public Service Company of Colorado, graphically showed the application of modern relay protective systems. They used a wired demonstration board to simulate fault clearing on the regional interconnected power system. John V. McGuire, Allis-Chalmers Mfg. Co., in discussing changes in NEMA standards, said, "One basic result of standardization is the reduction of the numbers and models or types of any line of equipment. In most cases this has resulted in a reduction in the number of standard ratings in terms of voltage, current or kva. Any reduction in models allows the manufacturer to produce better and lower-cost equipment. To the utility, standardization should mean better equipment at lower cost as well as lower inventory expense. The introduction of new standards for larger regu-

G. B. Buck leads the panel of experts, including J. W. Cryder, J. A. Bullock, H. H. Lenhardt and Paul Pollock. Others are not shown in the above picture

Relay demonstration board designed and built by T. L. Berri, P. S. of Colorado



lators was accompanied by price reductions up to 10%; today transformers in the standard rating cost from five to ten per cent less than similarly rated non-standard transformers; recent change in breaker standards already has been reflected in price reductions in switchgear up to 12%. The utility industry as a whole has benefited and can expect to continue to benefit from the recent changes in NEMA standards," said McGuire.

Several new electronic tools of economic and operating value to utilities were described by J. C. Livesay, Colorado Central Power Co. In particular, he discussed a new selective calling system for mobile radio units as a solution to channel congestion and interference; new carrier equipment that allows the dispatcher to talk to mobile units 200 to 300 ft. away from any power line with carrier signal; a new electronic carrier control for off-peak water heating, and new methods for locating transmission-line faults with radar-type equipment.

Krug, Warren Discuss Public Power

FRANKLY, I would hate to see all public power, said J. A. Krug, Secretary of the Interior, in addressing the annual meeting of the American Public Power Assn. at Los Angeles, May 10-12. Continuing Krug said, there is room for both public and private power enterprise in America. He told of the progress of public power, decrying the opposition by private utilities. Some private management supports federal multiple-purpose developments, but in sharp contrast are other elements that demand they be given a monopoly with a bus-bar policy in return for withdrawal of their opposition to further federal development. The argument continues on whether this power should be sold at cost by the government with preference for public agencies, or whether the power should be sold at the same rate to privately owned utilities. We cannot accept this kind of monopoly by private interests, said Krug.

California's Governor Earl Warren said we must have greater power development as rapidly as possible to keep pace with our growth. Most of this development must be hydroelectric power and it must be developed by public agencies, said Warren. Most of our potential is inseparably connected with water conservation for all purposes. It therefore must be developed in projects that serve all these purposes. No private interest could integrate these functions. Only public agencies, acting in cooperation where jurisdictional lines are transcended, can do such a job. Thus the governor made his position clear on public power.

Power from multipurpose projects must not be too heavily taxed to subsidize irrigation, again warned Samuel B. Morris, general manager and chief engineer of the Los Angeles Department of Water & Power, in discussing resources of the Colorado River. He expressed hope that the Arizona-California controversy over the right to Colorado River water can early be resolved in order that further much needed power development may be undertaken.

Engineering, operating and management problems occupied several sessions of the meeting. The industry is not suffering from lack of "tools" to accomplish economical system design, said O. B. Falls, General Electric Co. Among developments and methods by which the power engineer can now more adequately and economically design his system to meet increasing load densities he cited: reduced insulation levels, forced cooling of large power transformers, package and unit substations, the light density secondary network, aerial cable, carrier-current control of loads, secondary banking and high-speed reclosing of primary feeders.

Ivan L. Bateman, Los Angeles Department of Water & Power, told of the new FCC frequency allocations effective in July. These will shift some stations that have had interference to higher bands. The new order should go a long way toward straightening out the present badly congested condition. He said the commission specifically encourages joint use of frequencies with fire, police and other utilities, where load will permit.

Radiant heating was discussed by R. W. Shoemaker, consulting engineer. He feels that radiant heating is the best means of utilizing electrical energy for space heating. The big problem with all forms of space heating is high demand on system peak. He suggests carrier-current control as one means and heat storage in water as another for keeping space heating off the peak.

Construction and characteristics of Hipercore distribution transformers was the subject of an illustrated talk by Howard Tindall, Moloney Electric Co. "The Electrical Industry by 1959" was presented by D. C. Hooper, Westinghouse Electric Corp. Rates and rising costs were the subjects of a round-table discussion directed by J. Frank Ward, Department of Public Utilities, Tacoma. Ward reported results of a survey which showed that the smaller systems are more affected by rising costs than are the larger utilities. He said some adjustments in rates will have to be made, citing the 50c minimum bill as one case and space heating rates as another. His utility and others are considering a rate for house heating where the customer will pay a certain proportion of his winter bills in the summer to help average out monthly bills.

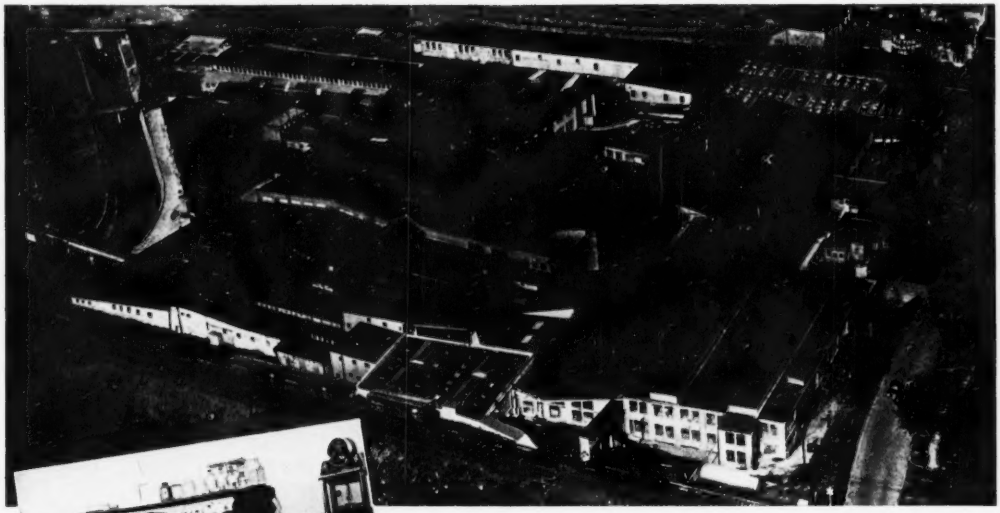
P. C. Spowart, Seattle City Light, presented a report for the public relations committee in which the need for a public relations program for publicly operated utilities was stressed. About 1% of gross income would be a fair price for a public relations program, the committee found.

It is a custom of the American Public Power Assn. to make an award each year for the best annual report. This year the award went to the Los Angeles Department of Water & Power for its 1948 report. Walter Boyd accepted the award from association president, Major Thomas Allen, on behalf of the department. Los Angeles received further recognition when its general manager and chief engineer, Samuel B. Morris, was elected president of the American Public Power Assn. for the coming plan the new year.

AIEE

Trends in design and application of power transformers were presented at three recent AIEE meetings in the Northwest. J. W. Butler and A. M. Garin of General Electric's Pittsfield, Mass., works presented an illustrated discussion of design fundamentals and modern practice at Spokane April 18, Seattle April 19, and Portland April 21.

Joint meeting of the Seattle Section, AIEE, with the University of Washington branch, AIEE, the last meeting of the season, was held recently to plan the new year.



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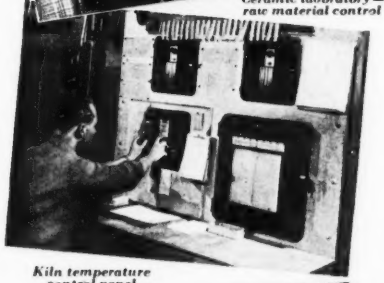

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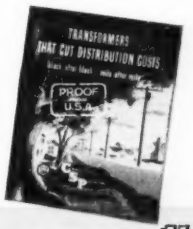

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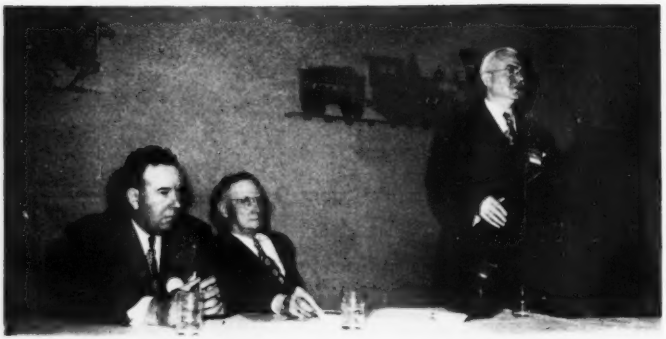


Collier Simpson Geary

Contractors Meet At Denver

MORE important, perhaps, than the program itself, although the latter was filled with valuable information, was the initiation of a new district for National Electrical Contractors Assn. at Denver, May 7. The electrical contractors of Montana, Idaho, Utah, Wyoming and Colorado will have a district representative and representation, it was promised. The Rocky Mountain Chapter of Denver acted as host for contractors and chapter managers from Salt Lake City, Billings, Cheyenne, Colorado Springs and other cities in the region.

J. E. Collins, Denver contractor, vice-president of District 8, bade the five-state representatives welcome, saying he felt glad that the region was no longer to be attached to the tail of Texas, but would have a district organization of its own, with a field man assisting in organization work with the help of the IBEW vice-president.

Ralph Johnson, Sturgeon Electric Co., Denver, past president of the Rocky Mountain Chapter, presided over the morning session and Paul Jussel, chapter president, the afternoon session. Don Larson, manager, handled arrangements.

Si Halle, on apprenticeship training, Paul Geary, on the NECA organization, and Wallace Wright, on union relations, gave the most important talks at the conference, following brief reports from the various states, presented by Jack Laub of Logan, Utah, Carl Fehr, Billings, Mont., Charles Simpson, Cheyenne. The latter is governor for the Rocky Mountain Chapter. Laub and A. L. Howarth, Utah chapter manager, reported the initial steps for a chapter in Idaho which might either be separate or be affiliated with the Utah chapter. The group would be located around Pocatello, near the site of the atomic project. Joseph C. Gilgan Jr. of Idaho was unable to attend because of storms.

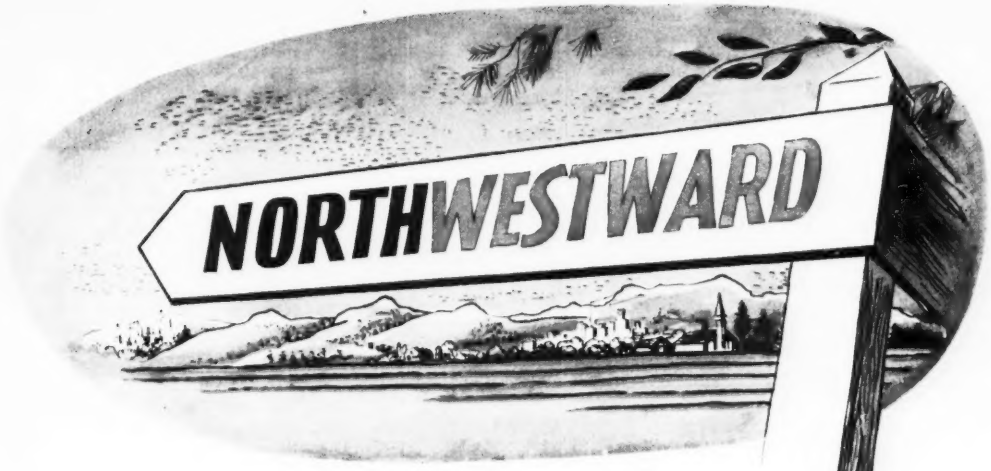
Si Halle, Colorado Springs, member of the national joint apprenticeship committee, said there was no such thing as a management viewpoint. It is an industry-wide viewpoint respecting apprenticeship training. Telling of the setting up of apprenticeship standards as a basis for training, adjustable to state variables and conditions, he made the point that the G. I. is not the whole program, but that vocational and high school young men must be encouraged to become journeymen electricians in order to meet the needs which growth and development in the area would require. He also made a point that journeymen must be trained beyond the journeyman level in order to fit them to handle the complicated electronic and other electrical developments of the present time.

Following him, Clifford B. Noxon, regional supervisor of apprenticeship for the U. S. Department of Labor, told what joint committees could do. One interesting point he made was that a figure of one journeyman electrician to each 1,200 people in a community was his estimate of the need to take care of electrical work, both for building construction and for maintenance and repairs. This figure can be applied to any community as a measure of the effectiveness of its apprenticeship program.

Paul Geary, executive vice-president, NECA, spoke little of national trends and much of the program of NECA, seeking to answer all questions regarding it. He differentiated between the scope of problems that could be handled at a national level and those that require local handling. He described each of the various activities of NECA and in the session that followed, answered questions from the floor regarding costs and dues, field service, codes, joint meetings with the union and the newly formed line constructors division.

Wallace Wright, International Brotherhood of Electrical Workers vice-president for District 8, prefaced his talk with a history of labor organization and said that the electrical industry had had no serious work stoppages. He said the union preferred to work with NECA in collective bargaining and cited states where NECA was operative as examples of harmonious relationship, whereas in other states relationship was not as good. In Montana, he said, 15 separate linemen's agreements had been merged into one single line construction agreement, which gave hope that similar regional agreements could be reached in the future. Commenting on the Taft-Hartley law, he said the closed shop saved employers money, since they were enabled to use the union as an employment agency, reducing their costs and obtaining the facilities of the entire brotherhood to bring capable workmen to an area where badly needed. The joint committee of employers and labor to meet problems as they arise, he said, were not always perfect, since their members were human, but experience had shown that fewer difficulties existed where joint

Jussel Larson



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committees were formed. Where they were lacking, most of the time spent in negotiations was devoted to settling "beefs" that should have been settled as they arose throughout the year. He also advocated joint conferences, such as that held last year in Dallas, between NECA and IBEW, each holding its separate business meetings but joining for general sessions.

The conference was addressed first by Governor Lee Knous, who said he was going to Washington to discuss power development in the area and advocated a commission similar to the Hoover Commission to study the whole relation of federal government and the states and thus avoid wasteful duplication.

Denver's young mayor, Quigg Newton, asked the contractors to take an active part in the revision of antiquated building codes and eliminate deterrents to new building.

The program was preceded by a social gathering Friday evening, May 6, at the Shirley-Savoy Hotel, and concluded with a banquet Saturday evening, presided over by P. E. Collier. Registration reached the 200 mark, including wholesalers, manufacturers and utility people.

IAEI

Only one of the four chapters of International Association of Electrical Inspectors in the Mountain States to hold its annual meeting was the Idaho Chapter, at Idaho Falls, May 5. Conflicts in dates, etc., made it impossible for Charles L. Smith, secretary-treasurer, IAEI, to be present, but W. L. Gaffney, secretary, Northwestern Section, substituted for him in reviewing the proposed changes of the National Electrical Code. Hy C. Hansen, Idaho Falls, chairman of the chapter, presided.

Much discussion was held whether to abandon or to carry on the Idaho Chapter, but after exploring the whole field it was decided to carry on. Park Forte, city electrical inspector, Boise, was elected chairman, and E. W. Reising Jr., secretary-treasurer, for the ensuing year.

Speakers on the program included Harold Babbit, H. L. Electric Co., Idaho Falls; M. P. Buswell, Westinghouse Electric, Salt Lake City, who discussed breaker panels and displayed and demonstrated them. Parker C. Gray, division superintendent, Utah Power & Light Co., discussed service entrance installation rules and regulations. Lee Steck, manager, Fall River REA, gave an excellent reasoning as to why the REA wants electrical inspection. Carl Frisbee, General Electric Co., discussed store lighting technique and also the matter of fluorescent lamp

Wright Geary

powder hazards. Newell C. Stevens, Utah Power & Light Co., sales manager from Preston, Idaho, discussed the prospects for the phosphate industry in Idaho at the evening banquet. Les Johnson, G-E, Salt Lake City, led a code panel discussion session.

Carl Baldridge, former secretary of the chapter, and state electrical inspector, discussed the failure of the move to have adopted some changes to the state of Idaho's electrical code. The code never reached the floor of the assembly, although a great deal of work was done on it. Attendance was about 65. Robert Bauchman, Idaho Falls Electric Co., was general chairman, assisted by Hy Hansen, Stanley Helm, Dave Hill, J. Russell Morton, Ray Moore and L. R. Walker.

Rocky Mountain Chapter decided not to hold its annual meeting until Oct. 24 and 25, according to Victor Moulton, secretary-treasurer. This will be after all the section meetings are held in the fall.

Montana Chapter decided to concentrate its efforts on the annual section meeting of the Northwestern Section, IAEI, in Butte, Oct. 3, 4, 5.

Utah Chapter held its annual meeting in April as already reported.

Central California Chapter passed a resolution at its April 28 meeting asking that the section meetings be changed from Mondays, Tuesdays and Wednesdays to a week-end of Friday, Saturday and Sunday. The committee felt that a greater number of the membership would be able to attend, both from the local community and from other localities.

NECA

With a single exception, cases taken to the council on industrial relations for the electrical contracting industry by Western chapters of NECA fared as badly as the Northern California Chapter's case did last year. The Southern California Chapter alone was relieved of some onerous demands by the union for vacations and a long list of benefits, but did get a wage increase. The San Diego case resulted in an increase in wages to match Los Angeles. Stockton likewise resulted in a wage increase. Billings, Mont., and Denver, Colo., likewise might better have saved the expense of appearing before the council in the east. Comments of some who appeared before the council would indicate that the body is no more judicial than it was reported last year, and that the contractors were inarticulate and received scant help from NECA.

William Damon, field representative from District 7, Omaha, was loaned to District 8, the Mountain Region, for organization work in Idaho and Montana. Preliminary steps were taken for a chapter in Pocatello, but recent advice reports that this group will go in with the Utah Chapter. A chapter was set up in Billings, Mont., recently. It has been working closely with the Rocky Mountain Chapter out of Denver. A field representative for the new District 8 has been promised.

Lawrence W. Davis, executive secretary and treasurer of the National Electrical Fund, will meet with the various local committees in the West during a tour in the month of June.

District 6 meeting at Oakland, May 22 and 23, will be reported in a future issue. Likewise results of negotiations on wages, vacations, etc.

NEWA

Pacific Zone, National Electrical Wholesalers Assn., holds its meeting June 8, 9 and 10 in Hotel Utah, Salt Lake City, according to R. A. Balzari, secretary. Ernest Brazier, General Electric Supply Corp., Salt Lake City, is in charge of local arrangements. The program includes meeting for members on June 8, general meetings for members and guests on June 9 and 10, with the usual golf play, banquets, etc. W. M. Jewell, Westinghouse Electric Supply Corp., Seattle, is chairman of the zone.

EMA

The West Coast Electronic Manufacturers Assn. has scheduled its 5th annual Pacific Electronic Exhibit from Aug. 30-Sept. 1 at the Civic Auditorium in San Francisco. The exhibit will be held in conjunction with the 1949 Western Regional Convention of the Institute of Radio Engineers.

EMEA

First annual installation banquet to welcome the new officers of the Electrical Maintenance Engineers Assn. of Northern California was held on May 26 in San Francisco.

TIMES HAVE CHANGED!

The events of the past few months have proved, sometimes in painful fashion, that the long predicted buyer's market is here; and with it come new problems and new challenges.

For eight years the problems of the electrical industry have been primarily production and distribution problems. The challenges have been individual challenges, requiring each company to find its own best means of manufacturing and distributing the maximum in products and services.

Now it is no longer a matter of production and availability, but of promotion and marketing. This poses group as well as individual problems, because the electrical industry is competing with all other industries for a share of the customer's dollar. When money is spent for a new car it may mean that there is none left over for a new range or freezer. The dollars that go into a new suit won't be available for a television set.

Before selling a brand we have to sell an idea. Before selling an appliance we have to sell the public on the electrical way of life. This requires effective, coordinated group effort. The urgent need now is for a unified, cooperative, industry-wide promotional drive.

The Pacific Coast Electrical Association, which has rendered invaluable service in the past, offers the best means of achieving that effective coordination and cooperation. If you are not a member, join now. If you are a member, support and work with your Association for a secure and prosperous future.

PACIFIC COAST ELECTRICAL ASSOCIATION, INC.

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GET THE MOST FOR YOUR MONEY—SELECT ANCHORS FROM THE MOST COMPLETE LINE

Whatever your guying requirement may be, there's a Chance Anchor that will do the job most efficiently. The Anchors shown here are made in a wide variety of sizes. Each type is designed for certain soil and guying conditions. One of these Anchors will do a specific job better than any other anchor you can choose. Standardization has advantages wherever it is practical, but remember that both the soil conditions and type are important factors in determining the type and kind of Anchors to use. That's why Chance Anchors are made in so many different types and sizes. That's why it pays to analyze each job and specify the Chance Anchor that meets the requirements.

Only Chance and Chance-licensed Anchor Rods and Guying Fixtures have the improved full-rounded Thimbleye that gives complete guy strand protection at any angle. The full rounded groove fits snugly around the guy strand and prevents kinking, flattening or spreading after installation or during slack pulling operations.

CHANCE 8-WAY EXPANDING ANCHOR

The latest contribution to better anchoring, the Chance 8-Way, gives you more holding power for less money. Better load distribution makes this new anchor stronger than any other expanding anchor. There is no wasted area. The load is distributed evenly over 8 blades which expand to form a cone-shaped square. Repeated pull-out tests demonstrate that the 8-Way develops more holding power and less creep than any other expanding anchor of comparable size under similar conditions, and that it retains its shape under extremely heavy loads.

Simplified construction makes the 8-Way easier to expand and more applicable to varied conditions. This simplicity also saves on manufacturing costs — a saving which is passed on to the user.

More than 13,000,000 Chance Anchors have been put in service—*more than all other makes combined.*

C 494

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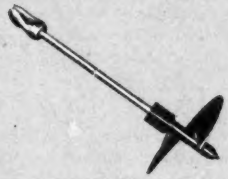
FOR EVERY GUYING NEED!

NEVER-CREEP ANCHOR
Made of structural steel. Pulls *entirely* against solid, undisturbed earth. For extra heavy loads in clay or loam.

NO-WRENCH SCREW ANCHOR
Sharpened steel blade double-welded to rod. Screws into ground with bar. For light loads in sandy soil, soft clay or loam.

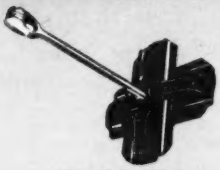


WRENCH-TYPE SCREW ANCHOR
All steel—double arc welded. Anchor hub absorbs installation strain. For light loads in sandy soil, soft clay or loam.

PYRAMID CONE ANCHOR
Acts as inverted wedge. Flaring base and flat faces increase wedging action. Used in rocky areas with rock wedging.

EXPANDING ROCK ANCHOR
No grouting necessary. The greater the pull—the tighter it wedges against solid rock. Set in 2" drilled hole.

SWAMP SCREW ANCHOR
For swamps, marshes, quicksand, river crossings or seasonally flooded areas. Screws down deeply by adding sections of pipe.



4-WAY STEEL EXPANDING ANCHOR
For years the leading expanding anchor—all steel with reinforced expanding arms. Usually installed in clay or loam.

2-WAY STEEL EXPANDING ANCHOR
Same construction as 4-way—used for lighter loads. Blades expand in opposite directions balancing load.

EXPANDING POLE KEY ANCHOR
Keys poles at the butt to reinforce them against unbalanced loads in soft soil. Ideal for congested Urban areas.

PROTECT YOUR INVESTMENT IN LINE CONSTRUCTION

Get the most efficient anchoring for every condition by making anchor selections from the most complete line. Your Chance catalog will help you in making the right choice. Or write for your copy of "How Much Will an Anchor Hold?" It tells how to determine the type and kind of anchor to use for every guying condition.

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SAN FRANCISCO, CALIFORNIA

THE MONTH IN BRIEF

One Cent Space Heating Rate

Rate increases granted the Portland General Electric Co. and the Pacific Power & Light Co. will in general restore rate levels in effect before reductions were made in 1945. Average increase under an order of the Oregon Public Utilities Commissioner will be 6%. In most cases the new rates will be the same or lower than those in effect in 1945. Increased rates are general with Portland General Electric Co., but apply only to Portland and Rainier with Pacific Power & Light Co. Of particular interest are the new residential schedules. For general residential service the new rate will be: first 50 kwh. per month at 3.5c per kwh., next 70 at 2.6c, next 80 at 1.6c, next 700 at 0.8c, and all over 900 kwh. at 1.1c per kwh. Excess above 10 kw. of demand per month at $1.20 per kw. Minimum, $1.00 per month. The all-electric promotional rate will be: first 300 kwh. or less per month, $4.85, next 700 at 0.7c, all over 1,000 kwh. per month at 1.0c per kwh. Excess over 10 kw. of demand per month, $1.20 per kw. Minimum charge, $4.85 per month. Under this schedule the maximum rate for electric space heating for homes will be 1.0c per kilowatt-hour.

Utility Offers to Wheel Power

To avoid duplication and to save the taxpayers money, Public Service Co. of Colorado has offered to "wheel" government power from the Colorado-Big Thompson plant. The offer was made over the signature of President J. E. Loiseau, in a booklet prepared to influence congressional decision on 1950 appropriations for the project. The company would use its own steam plants to firm up the power and would deliver it to municipalities and cooperatives classed as preference customers by the government. Proposed service charge is $1\frac{1}{4}$ mills per kilowatt-hour, the charge being subject to negotiation and state public utilities commission approval. The company made it plain that it is not withdrawing from its position that the bureau should not distribute power. Previously it has sought to buy public power at the bus bar and makes its present offer entirely in the interests of economy, it points out.

Savings Estimated

By using existing lines and relying on the Public Service Co. of Colorado to build additional line needed, the company estimates net savings to the Colorado-Big Thompson project would be $2,625,731; annual income available for amortization would be upped $166,287. The bureau's 1950 appropriation request includes $661,000 toward an estimated total cost of $1,996,200 to build a loop interconnecting Greeley, Fort Collins, Longmont and Loveland with the Valmont Public Service plant and the projected Flatiron bureau plant. These and a Greeley-Brighton line to cost $989,531 are duplicating and unnecessary, the power company says. The bureau estimates a line from Estes Park to Valmont will cost $432,500 and the company offers to build this connection at its own expense.

Compromise Suggested

A booklet prepared for congress a year ago by Public Service of Colorado challenged bureau plans to build duplicating lines. L. R. Patterson, company staff engineer, said that when the company began preparing its argument this year, it "decided the way to solve the problem was to offer something that answered a constructive need." (See preceding items.) He added, "We think our suggestion offers some real hopes for compromise of our differences." This year's booklet was prepared before the bureau announced intention to ask several million dollars for transmission lines to take Green Mountain Dam power to Gunnison and the San Luis Valley but, according to Patterson, the same principles would work on the eastern mountain front. Public Service of Colorado plans to start a 115-kv. line between Leaderville and Salida and to convert the existing 44-kv. line from Salida to Alamosa to 69 kv. at a total cost of $1 million.

Power Bill Section Repealed

Colorado's unique provision to prevent duplication of power facilities by REAs (Section 36K which required REAs to obtain certificates of necessity from the state public utilities commission before extending into territory already served by a municipal or private company) was repealed by the legislature before adjournment. However, a uniform electric cooperative bill offered by the USBR was never out of committee. Threats that the REAs would receive no more loans from Washington were made to press repeal of Section 36K. State taxation of REAs was not changed.

Idaho Power Offers To Buy Another Co-op

Idaho Power Co.'s offer to buy the Malheur Electric Co-op system at Vale, Ore., was approved by the board of directors and sent to the membership. Sale was recommended by the board because of high operating losses which have resulted in default to the government of some $60,000 in principal and matured interest. President Harry B. Wilcoxon of the association said that, unless cost of service was increased, the co-op would continue to lose about $1,000 a month. Idaho Power has offered to pay $473,000 for all facilities of the association and to assume obligation for consumer deposits and for return of all association membership fees.

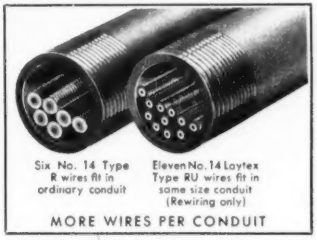
Utilities Defeat Separation Move

Hawaiian Electric Co. and other Honolulu utilities defeated an effort in this year's legislature to force them out of the appliance business. However, the question of a complete separation of utility and appliance operations has been referred to a committee for study before the 1951 legislative session. Small appliance dealers fought hard for the bill this year. Territorial government attorneys ruled the divorce would be legal but said that to force the companies out of the appliance business altogether probably would be unconstitutional.

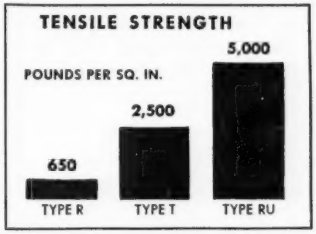
"HE PUTS 2 WIRES IN FOR EVERY 1 HE TAKES OUT...WITH Laytex® RU!"

Laytex permits more wires per conduit because it is America's smallest diameter, lightest weight, natural rubber covered branch circuit wire. U. S. Rubber Company's unique dip method applies 90% pure rubber to the conductors, eliminating the usual bulkiness and weight. Electricians on rewiring jobs will tell you that they can put eleven No. 14 Laytex Type RU wires into a conduit that holds only six No. 14 Type R wires. Moreover, they can use the same conduit—no need to rip it out.

Laytex RU is easier to pull through the conduit, because of a special wax finish. In a laboratory test, only 22 to 26 pounds pull was needed to draw Laytex through the conduit—as compared with 32, 30, 42, 45, and 80 pounds, respectively, for 5 other leading brands. That means Laytex is 33% to 300% easier to pull.


Six No. 14 Type R wires fit in ordinary conduit
Eleven No. 14 Laytex Type RU wires fit in same size conduit (Rewiring only)
MORE WIRES PER CONDUIT

Special tests by laboratory technicians reveal that Laytex RU insulation has a tensile strength of over 5000 pounds per square inch. This is because the insulation is made of 90% pure rubber, unmilled in order to preserve its high physical qualities.



Because the conductor leaves the liquid Laytex compound in a vertical direction, layers of Laytex of uniform thickness are formed around the conductor. This gives a wire that is perfectly centered and contains no thin spots.

Write for sample and booklet to Electrical Wire and Cable Department, United States Rubber Company, 1230 Avenue of the Americas, New York 20, N. Y.

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RU wiring with **RU?**

THIS MONTH'S NEWS

ARIZONA ASKS FOR FULL BRIDGE CANYON OUTPUT

Application for full power output from the proposed Bridge Canyon Dam on the Colorado River was made by the Arizona Power Authority. Present power shortage within the state was cited in the application to J. A. Krug, Interior Secretary.

Bridge Canyon would be the key structure in the government's proposed Central Arizona Project, power and irrigation development. Before Arizona's application for the full power output from this project, California had contended that, if Congress authorized construction, power users of California would be forced to pay for the Arizona development.

M. J. Dougherty, chairman of the Arizona power authority, wrote Krug that surveys show the state's allotment from Parker, Davis and Hoover dams, plus generating capacity within the state, are inadequate to meet demands. He said Arizona would need the full output of Bridge Canyon long before the structure could be completed and denied claims that California would have to subsidize Arizona farmers in event the project is approved.

Oregon Legislature Amends Law on Wiring Installation

Only one of the several such bills before legislatures of Western states to pass was the amended Oregon state law relating to installation of electrical wiring and equipment. (Sections 112-601 to 619). Those proposed in Washington, Idaho, Utah, for one reason or another, never came out of committees.

The amendments to the Oregon law provide an electrical advisory board to assist the state inspector in formulating regulations; allow cities and towns to have their own inspection if their codes are substantially the same as the National Electrical Code; permit the mayor or manager of a town to request state inspection where it does not have an inspection department; offer copies of the code at cost; set a fee of $1 for each inspection label, which must be signed by a licensed supervising electrician; set a $50 annual license fee for electrical contractors; provide for supervising electrician's and journeymen electrician's licenses of $10 and $5 respectively and set up regulations for the supervising electrician; also their examination by the board, licensing of those already practicing and registration of apprentices.

Government Breaks Off Purchase Negotiations

Five-year negotiations for government purchase of generating plants of the Salt River Water Users Assn. in Arizona were broken off last month. E. A. Moritz, Boulder City, USBR regional director, notified R. D. Searles, association president, of the action which ended a purchase plan sponsored by Harold Ickes when he was interior secretary.

Under the proposal, the government would have retired all of the association's bonded indebtedness—amounting to more than $24,000,000 at the time Ickes opened negotiations—in return for the systems generating plants.

Informal discussions opened in 1942 and a formal offer was made in 1944. Initial proposal to pay interest and principal on $16,000,000 in bonds and cancel or assume $8,200,000 still owed on construction, was increased several times.

Had the deal been completed, the Water Users would have retained control over retail power sales and irrigation water claims.

Engineering Study Looks Toward Utility Purchase

An engineering study looking toward a program for purchase of Puget Sound Power & Light Co. properties was outlined at a meeting of Seattle and Tacoma and PUD representatives.

The planning conference, held in the office of Seattle Mayor William F. Devin, was attended by City Light Superintendent E. R. Hoffman, Councilmen Bob Jones and David Levine of Seattle; Mayor Val Cawcett and Utilities Commissioner C. A. Erdahl of Tacoma; C. J. Jones and T. A. Ross of the Kitsap PUD.

The study will determine principally which agencies can best own and operate the White Salmon and Snoqualmie hydroelectric plants.

BPA RATE SCHEDULES FOR FIVE COMPANIES APPROVED

FPC has approved temporary rate schedules for sale of Bonneville power to five private utilities. Affected are Portland General Electric, Pacific Power & Light, Mountain States Power and Washington Water Power companies.

Under the contracts, Bonneville agrees to deliver a total of 370,000 kw. to the five companies at a load factor of not less than 60%. Available capacity will be divided as follows: PGE, 148,000 kw.; Puget Power, 102,000 kw.; PP&L-WWP, 109,000 kw.; Mountain States, 11,000 kw.

Bonneville may reduce the demands and curtail deliveries to a load factor of 60% during the December-April period, according to availability of power. The schedules are a combination of the rates and charges in the existing $17.50 per kilowatt-year "C" rate and 75c demand charge of the "F" rate, plus a diversity charge where the contract provides for delivery at more than one point.

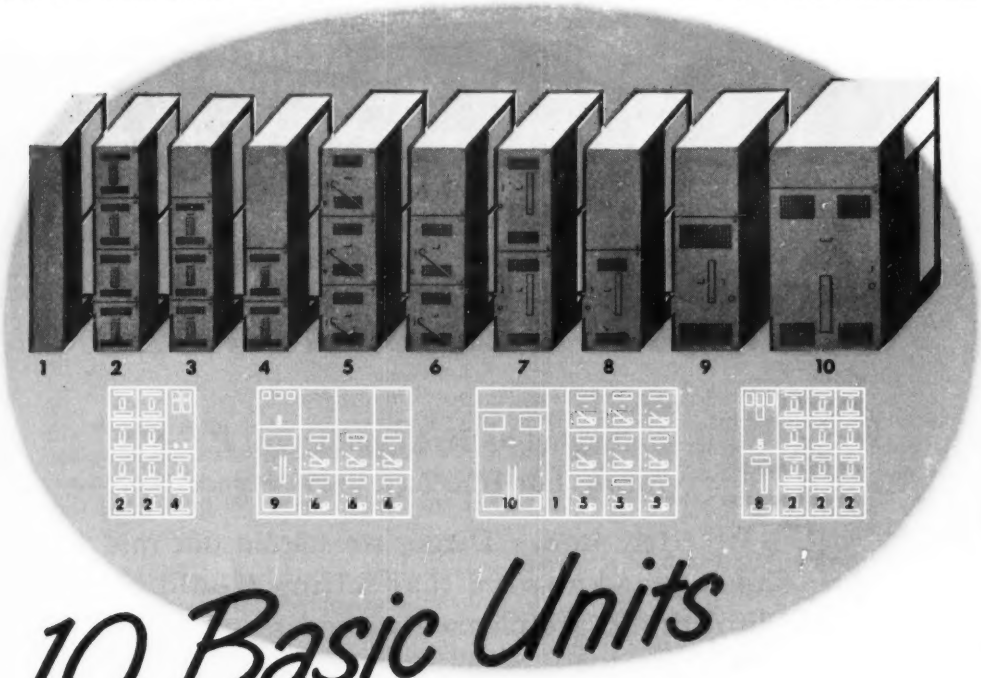
Kings River Development Will Be Discussed

Power development in the Kings River Basin of central California will be discussed at an FPC hearing in Washington, D. C., on July 21. The hearing was requested by Fresno Irrigation District and Pacific Gas and Electric Co. after an FPC examiner had recommended that the power be developed by the federal government. The power company, the irrigation district and the Bureau of Reclamation all have plans for development in Kings River.

New Unit at Coulee Makes Plant World's Largest

Grand Coulee's first East power house unit went on the line May 20, giving Coulee the largest rated hydro capacity in the world—1,100,000 kw. Eight other 108,000-kw. units will be installed in the east power house. Before the new unit, R-1, went on the line, Hoover Dam, with 1,038,000 kw., was the world's largest in installed rated capacity.

YOU CAN BE **SURE**.. IF IT'S
Westinghouse



10 Basic Units

meet YOUR breaker requirements

Assemble these basic units, including standard instrument panels, to fit your own 600-volt feeder and breaker requirements. "Unitized" Switchgear eliminates special design and engineering costs, and yet provides complete flexibility of arrangements.

In addition, you get faster delivery, lower installed cost, and features that slash maintenance time to a bare minimum. Draw-out breakers are disconnected, inspected, and replaced in a matter of minutes. This enables effortless inspections to keep breakers in top operating condition... saving many maintenance dollars.

Have a look at how "Unitized" Switchgear can benefit your operation. Get your copy of B-2296-D—complete with ordering and installation data. Your Westinghouse representative can supply you, or if you prefer, write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-60715

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PLEASE READ ABOUT A FEW OF THE PROMOTIONS WE'VE BEEN HAVING TO HELP DEALERS SELL MORE

We're glad to have members of P.C.E.A. visiting our fine city. *Have a good time.*

Here in San Diego, we started out this year knowing that selling would be more difficult. So, we planned a good many dealer promotions for 1949. Some of them have already been held . . . and they have been wonderfully successful. Ironer Demonstration Week brought more than 8000 housewives to dealers' to take demonstrations. The Television Premiere found 50,000 people visiting TV dealers. Our Freezer Clinics have just been completed. Cooking Schools are going on now.

If you'd like to learn more about any of these sales promotions, talk to us about them while you visit in San Diego.

SAN DIEGO GAS & ELECTRIC COMPANY

Owned by over 16,500 investors, most of whom live in California

"Give us the tools . . ."

The 81st Congress Can Halt the Administration's *SOCIALIST PROGRAM*

In his speech at Massachusetts Institute of Technology, Winston Churchill said that America's possession of the atomic bomb is all that has kept Soviet Russia from overrunning Europe and bombing London.

Our State Department knows that there has been another deterrent to aggressive warfare by Russia and a deciding one. That deterrent is the superior industrial strength of the United States. But once Russia approaches our industrial strength, then watch out! For Stalin or no Stalin, there will be trouble. Therefore, the simple table below is worth every American's careful reading. It shows in percentages what Russia did with her national income in 1948 and what we did with ours:

	USSR	USA
Civilian use	60%	79%
New capital equipment and public works	21%	12%
Foreign aid		2%
Defense	13%	5%
Building of inventories and war stock-piling	6%	2%

These figures for Russia come from *The* (London) *Economist,* Britain's influential economic journal.

These figures are estimates based on information from behind the Iron Curtain, and so cannot be checked directly. But they fit with what is known of Russian development.

The table shows that Russia is straining every resource to build up its industrial strength. When Russia's effort is measured in *dollars,* and compared to ours, the figures show:

Where we spent $20 to $21 billion for new industrial plants and equipment last year, the Russians spent $12 to $14 billion.

But while we used about $9 billion of this to *replace* old equipment, the Russians spent no more than $2 billion for replacing old equipment. The Russians had much less worn-out and obsolete equipment to replace. They could concentrate their efforts on expanding their industries and buying new equipment.

So—we used only $11 to $12 billion to *expand* our industries.

And the Russians used almost as much to expand theirs—$10 to $12 billion.

Russia is gaining industrial strength as fast as we are—and may soon be gaining faster. The more she gains and the faster she gains on us, the greater is the danger of war.

continued on next page

American industry is pushing modernization and expansion hard. It is doing an heroic job. McGraw-Hill's recent survey* shows that *industry* already has in hand plans to build plants and buy equipment in the next five years adding up to $55 billion. Industry plans that investment—*and much more—if it can get the money.*

On those plans of *industry* depend *our* national security.

If these plans of ours are cut back, the Russians will be years closer to their goal of industrial equality—the strength that they need to wage aggressive war successfully.

But more and more our industry's plans are being menaced by socialist policies in Washington. The President continues to urge a further increase in the tax on corporate profits, even though federal taxes alone now take 38 cents of every dollar of profit. He wants $3 billion more in taxes on corporate profits now, plus added personal taxes.

Last year corporations spent almost two-thirds of their profits—about $13 billion—for new plant and equipment. This year corporation profits will be lower than last year's $21 billion, perhaps by 20 per cent. Subtract a fifth or more from last year's profits. Then adopt the President's proposal and take $3 billion more in corporate taxes and you raise havoc with planned expenditures for new plant and equipment.

Approval by Congress of the President's tax program would cut industry's program of plant and equipment development by a third or more. That means a major blow to our prosperity as well as our national security. For as capital investment goes, so goes general prosperity.

Further serious damage would be done by Congressional approval of the President's industry-control bill. The so-called Stability Act of 1949 (the Spence Bill) would severely check industrial progress. That bill would put the federal government in the business of providing the added industrial capacity which the tax program would prevent private industry from doing for itself. It would be hard to conceive a better and surer way to dry up private investment in new plant and equipment. For every dollar of government investment will scare away many times more dollars of private investment. People will not want to risk their money in businesses competing with the U. S. Treasury. At the same time it will attack private investment in another way. It means that government would spend your income for you instead of allowing you to spend or invest for yourself. That is the high and quick road to socialism.

American industry needs right now great courage and incentives if it is to carry out its tremendous building program. It needs also a release from the program of a socialist administration in Washington with its systematic discouragement of enterprise and risk taking.

Above all, industry needs assurance by the actions of the 81st Congress itself that there is a future in this country for a system of dynamic capitalism, functioning in a free society. By acting now to strengthen the American people's faith in their industrial system, by providing needed incentives for management and investors, by protecting industry's capacity to buy new equipment, the 81st Congress can sustain American industrial progress and keep us united and strong.

But if we kill freedom of industrial planning and action by unneeded taxes and government controls we put ourselves—and our friends all over the world—in dire peril.

Nothing would please the Communists more.

James H. McGraw, Jr.

President, McGraw-Hill Publishing Company, Inc.

***A complete report on our national survey may be obtained by writing McGraw-Hill Publishing Co., 330 West 42nd St., New York 18, N. Y. This is one of a special series of editorials on industry's needs for new plants and equipment.**

ANOTHER Good Reason for using Square D Control

New "OFF-THE-SHELF" Parts Kits make normal maintenance easier than ever!

All motor starters and contactors are subject to periodic contact replacement under conditions of heavy load or frequent operation. That's why Square D has always stressed accessibility of these parts. Now, the parts themselves are packaged in easy-to-stock kits to make that replacement job even more simple.

Each kit contains all parts necessary to replace load contacts on two or three-pole contactors and starters. Parts are individually packaged in clearly labeled envelopes. An illustrated service bulletin is enclosed to provide quick parts identification and complete installation instructions.

Six different Class 9998 Parts Kits are available for servicing Sizes 0 and I manual starters and Sizes 00, 0, I and II magnetic starters and contactors.

Address inquiries to: Western Division Headquarters
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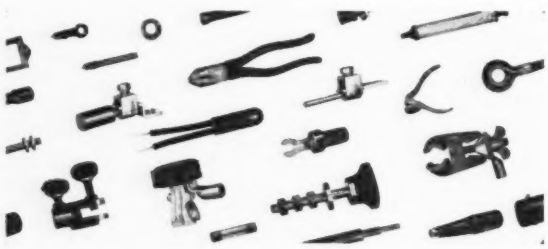

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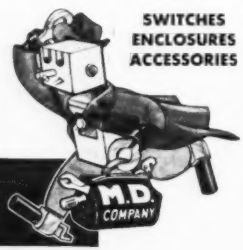


METER DEVICES
COMPANY · CANTON, OHIO

B. C. Electric Building Transmission Link

A 66-mile transmission line from Victoria to Nanaimo to link the B. C. Electric Co. system with the Campbell River plant of the B. C. Power Commission will be completed in 1950, according to present estimates. The $3 million job will add 18,000 hp. to B. C. Electric's island system capacity. Work will include construction of the $2,500,000 line, a $341,000 substation on the outskirts of Victoria; a 60,000-volt line from the new substation to the company's Bay St. sub in Victoria.

Pumping Restrictions Are Removed by Association

All pumping restrictions have been removed by the Salt River Valley Water Users Assn. but users were warned summer regulations may have to be placed into effect should hydroelectric supply fall short of expectations. The association's power facilities will be boosted after June 1 when installation of a 7,500-kw. steam generating unit is completed at its Tempe plant.

● Former City Officials of Port Angeles, Wash., who illegally purchased a diesel generating plant to meet an emergency power situation last year, and their bondsmen must stand trial, State Attorney-General Smith Troy has declared. The suit would involve $43,406 paid on the $90,000 plant before a state examiner stopped further payments in January, citing violations of state laws.

● Tuolumne County (Calif.) Water District has applied to FPC for an 18-month preliminary permit for a hydroelectric project near Yosemite National Park. The district proposes six storage reservoirs on the Tuolumne and Stanislaus rivers and Herring Creek. It estimates that there would be 72,000 kw. of power available 90% of the time from an installed capacity of 194,000 hp.

● Telluride Power Co. has asked FPC to authorize issuance of $300,000 in 6% cumulative preferred stock, with a total of 3,000 shares to be offered at $100 par. The issue would be offered first to the company's present stockholders on a pro rata basis.

● California Pacific Utilities Co. is installing a 3,125-kw. transformer at Baker, Ore. This installation will virtually double power resources of the county, bringing capacity to approximately 14,000 hp.

BONNEVILLE MAY OPEN MONTANA BRANCH OFFICE

Bonneville Power Administration plans to establish a branch office in Montana, if its Montana substation and transmission line is approved by Congress, D. L. Marlett, assistant Bonneville administrator, announced in Portland.

Location of the office will be determined later, he said. Budget requests for Montana work total $833,000 for new construction and $2,687,000 in contract authorization.

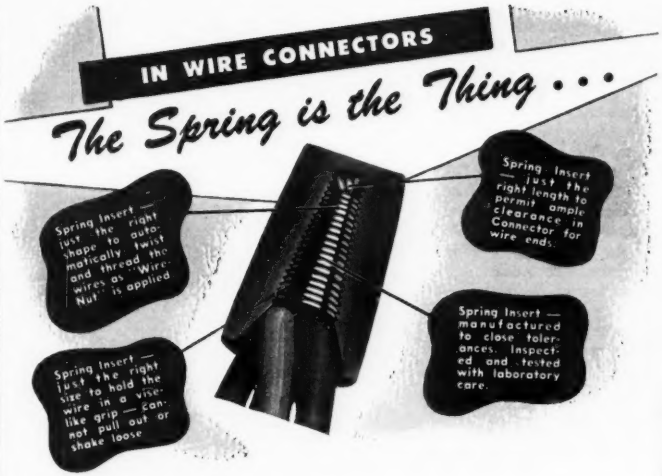
Included in the Montana program are Spokane-Kerr, Kerr-Anaconda and Hungry Horse-Kerr transmission lines, a switching station at Kerr and additions to the Kalispell substation.

● BIDS on supplying two 70,000-hp. hydraulic turbines for the power house at Detroit Dam on the North Santiam River in western Oregon have been called for by Col. O. E. Walsh, Portland district manager, Corps of Engineers. Estimated cost of the two turbines is $1,500,000. The call for bids specifies shipment of the first unit by May 15, 1952, and shipment of the second unit by Jan. 1, 1953. Start of operation of the generating plant is scheduled for December 1954

● A $3,188,268 CONTRACT for construction of an addition to the City Light Gorge power house has been awarded by the Seattle, Wash., Municipal Board of Public Works to Guy F. Atkinson Co. of San Francisco. The addition will house a 92,500-hp. generator. Contract for $254,680 was awarded to the Associated Electrical & Mechanical Co. of Seattle for construction of a 230-kv. transmission line between Seattle and Renton en route to the Skagit.

● BIDS for furnishing three 100,000-kva. generators have been called by the Seattle, Wash., Municipal Board of Public Works for installation in a new power plant at Ross Dam. Opening of the bids was scheduled for June 8, with delivery of the generators expected in about two and one-half years, according to E. R. Hoffman, superintendent of Seattle City Light.

● BONNEVILLE has completed its 115-kv. transmission line from Pasco, Wash., to McNary Dam site and has energized the 12,000-kva. south McNary substation. These facilities will furnish 12,000 kw. for dam construction. The line also will serve the Benton County (Wash.) REA and the Umatilla Electric Cooperative.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UTILITY RAISES WAGES OF TECHNICAL EMPLOYEES

Wage increases of 52c a day for 141 technical employees of Seattle City Light have been authorized by the finance committee of the city council, retroactive to Jan. 1.

The adjustment affects linemen and electrician constructors, represented by Local 77-B, IBEW. These workers will be raised from $16.78 to 16.80 daily and, in addition, will receive 50c a day because of "unusually hazardous conditions." They must work above the power lines of other utilities.

The new rates are comparable to those paid by Puget Sound P&L.

● PAY boosts of 7½% were provided in an agreement between Western Colorado Power Co. and Local 1200 IBEW. The settlement followed two days of negotiations. Some 200 employees are affected.

● A $459,000 ISSUE of short-term Seattle City Light bonds has been sold at a record price by the board of administration of the municipal employees' retirement and pension fund, which had been carrying the bonds as an investment from its cash surplus. The bonds were sold for $527,000, a premium of $68,000, declared to be the best price ever offered for any Seattle municipal securities. Maturing in from one to six years, they have coupon interest rates ranging from 3.75 to 5%. The purchaser's return of approximately 1.3% marks a new low for city bonds.

● ALLIS-CHALMERS Mfg. Co. of Milwaukee, Wis., submitted a low bid of $3,542,010 to the Corps of Engineers at Walla Walla, Wash., for the design and manufacture of three hydraulic turbines for the proposed Ice Harbor Dam on the Snake River, according to Col. William Whipple, district engineer. No fabrication will be initiated until funds are made available by Congress.

● C. J. MONTAG & Sons of Portland submitted a low bid of $637,504 to the Bonneville Power Administration for construction of the 21-mile Detroit-Lyons 230-kv. transmission line, which will transmit power for work in connection with construction of the Detroit Dam, a unit of the Willamette Basin flood control, navigation and power project.

● FPC has approved USBR's rate schedule for firm and secondary power produced at Fort Peck in Montana. The schedule will apply to purchasers having their own engineering facilities.

Twelve Reddy Kilowatt traffic signs in use throughout the Washington Water Power Co. territory help in the company's safety campaign; in addition give publicity to construction work

Bids Called for Meridian Dam on Williamette

First bids on construction of Meridian Dam, on the middle fork of the Willamette River 23 miles south of Eugene, Ore., will be opened June 15 by the Corps of Engineers at Portland. The work involves excavation for a spillway and construction of an earthfill embankment at an estimated cost of $2,000,000. Meridian, a unit of the Willamette basin project, will be a combination flood control and power dam. Estimated cost of the completed dam is $57,000,000.

● IMMEDIATE peacetime aim of the Atomic Energy Commission is production of electric power from fissionable material, Chairman David E. Lilienthal last month told a press conference at the Hanford Works, Richland, Wash. The atomic reactor project planned near Arco, Idaho, is a part of this program, he said. "Development of electricity from plutonium, uranium 235 and ordinary uranium is the greatest technical problem in the world," he declared, adding that ten years may be required for achievement.

● PACIFIC POWER & LIGHT Co. has filed with the Oregon State Public Utilities Commission lower rate schedules for The Dalles, Ore., and vicinity. The new rates would be equivalent to those charged by the Northern Wasco PUD, which has recently entered the field in competition with PP&L. The proposed new rates would mean a saving to customers of approximately $70,000 annually.

BPA SUPPLEMENTARY FUNDS ARE VOTED

The Bonneville 1949 supplementary appropriation granted by Congress provides for additional funds totaling $7,500,000.

Lines affected directly include 230-kv. lines from Grand Coulee to the Snohomish and Wenatchee areas in Washington; the Detroit-Eugene line in Oregon; key lines out of Olympia to Covington and Port Angeles; the 230-kv. North Bonneville-Troutdale and the Holcomb-Naselle lines. Additional funds are made available also for the McKinley-Gold Beach and Reedsport-Coos Bay lines in southwestern Oregon and the Midway Benton lines in central Washington.

Oregon Town to Vote on Municipal Power System

Springfield, Ore., will vote June 24 on a proposal to establish an $800,000 municipal power system. The plan calls for purchase of electricity from the Bonneville Power Administration. The system would be financed by revenue bonds payable in 20 years.

Mountain States Power Co. holds a long-term franchise from the city. The proposal to be submitted makes no mention of purchase of Mountain States facilities.

● CONTRACT for 14 oil circuit breakers to be installed at points in Oregon and Washington by the Bonneville Power Administration has been awarded to Pacific Electric Mfg. Co., San Francisco, on a low bid of $249,900. The breakers will be installed at Eugene and Coquille, in Oregon, and Kennewick, Shelton, Olympia, Covington and Snohomish in Washington.

● O. G. HITTLE, district manager of the lower Columbia district of the Bonneville Power Administration has recommended a second power line to care for the Astoria, Ore., area. The present line can carry about 25,000 volts. He has proposed a line from Forest Grove to follow the route of the new Sunset highway into Astoria, with a branch line to serve the Tillamook area. BPA has no present plans for such construction.

● HEARING was to commence June 6 in FPC proceedings involving a "show cause" order to Arizona Edison Co. The power company was ordered to show cause why it should not be designated as a public utility as defined by the Federal Power Act. The company had stated that it would not take part in the proceedings.

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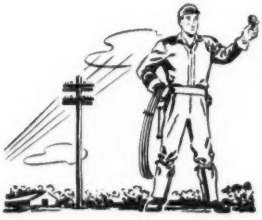

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REVISED ESTIMATES ON WATER SUPPLY RELEASED

Revised estimates of water-supply prospects for the Mountain and Pacific States, made by the Division of Irrigation and Water Conservation, U. S. Soil Conservation Service, on the basis of May snow-survey records, indicate general sufficiency. Notwithstanding subnormal precipitation, April run-off of most streams was abnormally high but did not reach flood proportions. Heavy snow packs remain at high altitudes and some danger of excessive stream flow remains in some important agricultural areas, especially Columbia River Basin, where the maintenance of river discharge at safe levels will depend on the weather of May and early June.

Snow cover throughout most of Columbia Basin is still above normal. May snow surveys show high water content in the remaining snow in western Montana, northern Idaho and along the Cascade Mountains in Washington and Oregon. Large volumes of water are still expected from most of these drainages. Warm weather was general elsewhere in the West during April, and run-off of many drainages was abnormally high, but subnormal precipitation helped forestall the flood hazard. While warm rains in May and early June could still cause many streams to rise above levels normally considered safe, the threat now appears to be generally in the usual, rather than unusual, stage.

Prospects are described in detail for the eleven States in the following paragraphs:

ARIZONA—Snow-stored water in the higher mountains is still above normal, and runoff continues at a fair rate despite subnormal April precipitation in the northern areas. Percolation of much of this runoff, with lessening of draft on ground water, is producing some correction of the ground storage depletions caused by previous heavy pumping. Storage in Salt River reservoirs is 40% of capacity, or about 400,000 acre-ft.—twice last year's amount. San Carlos reservoir holds 250,000 acre-ft. as compared with nothing last year.

CALIFORNIA — Prospective supplies in the Sierra have deteriorated about 10% because of deficient April rainfall, but will meet requirements. The possibility of inundation of Tulare Lake lands by overflow of Kings River seems to have disappeared. The California State Division of Water Resources reports that storage in 22 reservoirs serving Sacramento and San Joaquin valleys is about 70% of capacity, or 88% of the normal for May 1. Runoff of snow-fed streams is generally high; that of streams not snow-fed is generally low.

COLORADO — Runoff of most streams increased substantially during April, snow melt being heavy. As a result, estimates of summer flow are now 10% lower than those made last month. However, irrigation supplies are still expected to be above normal except for the extreme headwaters of South Platte and Arkansas rivers. Reservoir storage remains satisfactory, having shown the usual seasonal increase.

IDAHO — Runoff of key streams during April was above normal, but snow storage remains high. Irrigation, power, and navigation needs will all be well cared for, although irrigation began a month earlier than usual. Reservoir storage is held at low levels for this season, in anticipation of later heavy runoff.

MONTANA — Irrigation supplies will be good, with sustained stream flows throughout the summer. Most reservoir levels have been drawn down in anticipation of later filling as melting of high-elevation snow increases. Ground water tables throughout the state show a substantial rise from 1948 levels.

NEVADA—Streams will flow about 15% less than forecast in April, owing to almost total lack of precipitation. Should the dry spell continue it is likely irrigation supplies may be deficient in late summer, and reservoir storage may be low.

NEW MEXICO — Runoff increased substantially late in April. While the peak flow of Rio Grande is expected after mid-May, it will probably be less than the peak of 1941. In general, the outlook is for above-normal supplies, notwithstanding a lack of precipitation and the heavy runoff of April.

OREGON — Prospects remain generally good, despite the April shortage of precipitation. Late-season deficiencies are not expected if normal snow-melt and precipitation occur. New runoff records will be established in scattered areas and flow of many streams is expected to be unusually high.

UTAH — Prospects were not changed significantly during April. Most reservoirs are full or nearly full, but very little melting has occurred above 9,500 ft. Possibility of high water stages in some streams still exists, although April melting was orderly.

WASHINGTON—In line with prospects elsewhere in Columbia River Basin, prospects for irrigation, power and navigation appear very good. High water is still possible in the Yakima and Wenatchee drainages, as heavy mountain snow packs still remain, notwithstanding the above-normal runoff during the month of April.

WYOMING—Estimates of summer flow made in April have been reduced by 10%, except for Wind and Popo Agie rivers, for which a 15 to 20% drop is expected. As in the other Rocky Mountain States, warmth and low precipitation characterized the April weather. Runoff was heavy. While this did not result in floods, later runoff will probably be reduced in consequence. Satisfactory reservoir storage reported in April is unchanged except for seasonal increases.

Engineers Plan Survey of Alaska Water Resources

A comprehensive survey of Alaska's water resources, particularly as a source of hydroelectric power, has been ordered by the Corps of Army Engineers and assigned to Col. William E. Potter, Alaska district engineer at Anchorage, with the provision that he may call for assistance from Col. L. H. Hewitt, Seattle district engineer.

Preliminary surveys indicate a single 350-ft. dam on the Yukon River could produce 2,000,000 to 3,000,000 kw. of power, as compared to Grand Coulee Dam's present production of 1,080,000 kw. The dam, in Rampart Canyon, would create a lake 250 miles long with 40,000,000 acre-ft. of usable storage.

Alaska's total present power development is only 74,000 kw. but shortages are frequent, it is reported.

● A CONTRACT for installation of a $1,151,672 power system at the new Los Angeles Hyperion sewage treatment plant was awarded to the Newbery Electric Co. of Los Angeles by the Board of Public Works. The power system will operate independently, with sewer gas turning large turbines which in turn will energize generators capable of producing all power necessary for the plant.

● SMITH & WHITE, Vancouver, Wash., submitted a low bid of $374,450 to the Bonneville Power Administration for construction of the Foster Creek-Columbia River section of the Foster Creek-Snohomish 230-kv. transmission line. The section is 34 miles in length. Contract for 21.4 miles of 230-kv. line went to C. J. Montag & Son, Portland, for $694,654.

● THE WASHINGTON ELECTRIC CO., Tacoma, Wash., submitted a low bid of $82,277 to the Wasco Electric Cooperative, The Dalles, Ore., for construction of 197½ miles of power distribution lines in Wasco, Jefferson and Wheeler counties in Oregon.

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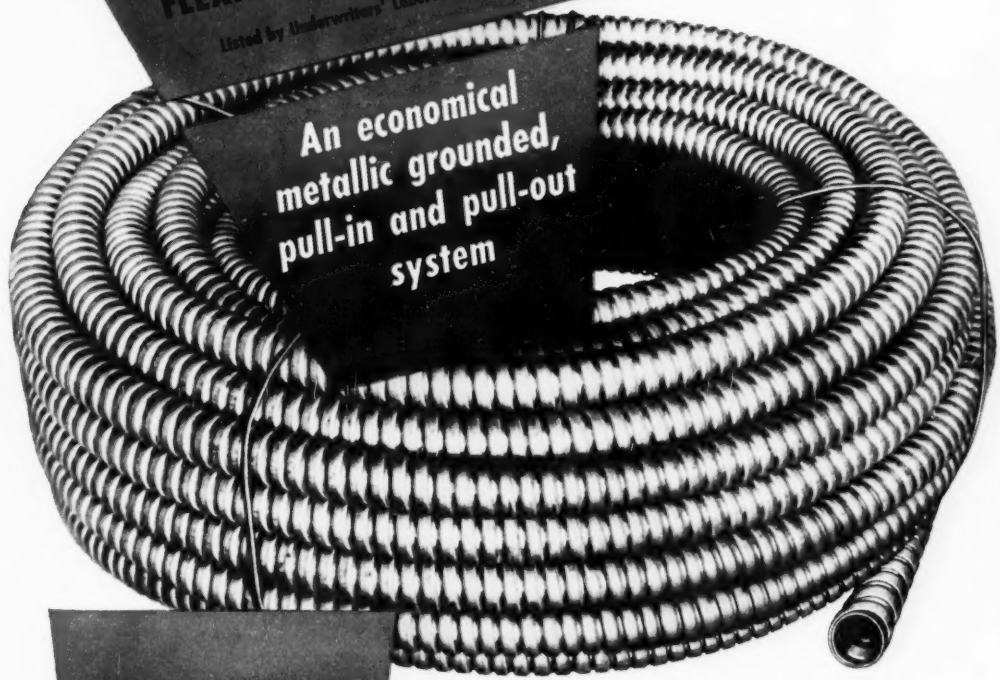

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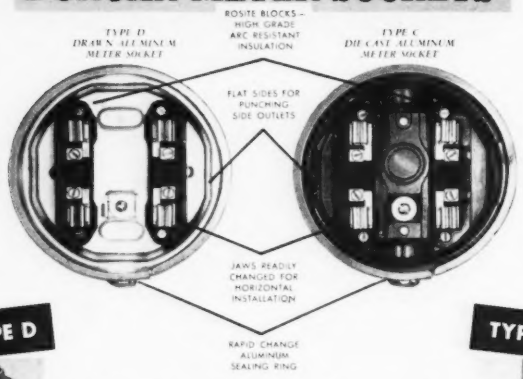
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NEWS ABOUT PEOPLE

Utility Announces Top Management Changes

Changes in top management of San Diego Gas & Electric Co. announced last month made A. E. Holloway, president, and L. M. Klauber chairman of the board. Klauber was moved up from president and Holloway from vice-president when Hance H. Cleland asked to be relieved of the position of chairman of the board. Cleland, who

Holloway

is nearing the company's retirement age, will continue as a director.

"Doc" Holloway started with the power company 39 years ago, working as salesman, sales executive and, since 1932, as vice-president in charge of sales.

H. G. Dillin has been advanced from commercial manager of the utility to vice-president in charge of sales. Dillin started with the company in 1924 as a draftsman. Two years later he entered the new business department in charge of contracts, and later became engineer in charge of rates, rules and regulations. He was appointed commercial manager last year.

Walter F. Chapman will fill the position of commercial manager. Starting as an engineering department draftsman in 1922, Chapman later became head electrical estimator. In 1925 he was transferred to the commercial department and became its superintendent in 1928.

● Southern California Edison Co. has appointed Jack Altland to the post of purchasing agent of the company.

● A. E. STRONG has retired as vice-president and regional manager of Coast Counties Gas & Electric Co. after 42 years of service, but will retain his position as a company director. Strong joined a predecessor company in 1907, progressing through the organization and in 1929 was made general superintendent of Coast Counties Gas & Electric Co. In 1945 he was elected to the board of directors and was designated regional manager of the company's coast and valley region. In 1947 Strong was made a vice-president of the company. He is succeeded by R. L. HAYDEN, who has served for the past two years as head of the company's Contra Costa region. He has been with the utility since 1930.

● ANNOUNCEMENT was also made of the appointment of HUGO W. DRUEHL to the post of manager, organization planning and personnel for Pacific Public Service Co. and Coast Counties Gas & Electric Co. He has been serving as an assistant to E. G. Lawson, president of the company.

● ON JULY 1 R. J. NEWELL will retire as director of Reclamation Region 1, the Columbia River Basin. He has been on the Bureau of Reclamation staff since 1923 and its director since 1945. He will be succeeded by HAROLD T. NELSON, assistant director of the region since 1946.

● B. C. ELECTRIC RAILWAY Co. has established a new hydraulic department under the management of F. A. LAZENBY, to carry out design and supervising of construction of future hydroelectric development within the company.

● PACIFIC POWER & LIGHT Co.'s president PAUL B. MCKEE has resigned from the presidency of Portland Gas & Coke Co., as a step toward the long-planned separation of the two utility systems. McKee has headed the two companies since 1933.

● RAYMOND J. DOYLE, former manager of the San Bernardino district of Southern California Edison Co., has assumed duties as San Joaquin Valley division manager, succeeding the late Arthur T. Lawson. JOHN C. MESERVE, industrial sales supervisor in the San Bernardino district, is the new district manager in that location.

● GEORGE N. HAWLEY, former manager of industrial sales for Southern California Edison Co., has been made sales manager of the utility. T. L. Van Law, assistant manager of industrial sales, has been appointed manager of that department. Hawley has been with the Edison company since 1928.

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● STANLEY M. JOHNS, manager of the Salt Lake City office for Westinghouse Electric Corp., has been appointed manager for Westinghouse in the southern California area, headquartered at Los Angeles. He replaces WALTER G. WILLSON, Westinghouse manager at Los Angeles since 1943, who for reasons of health has been transferred to Phoenix as manager there. Johns is replaced in Salt Lake City by H. B. HODGINS, who was formerly manager for Westinghouse at Spokane. ROBERT E. BLASEN, former lieutenant colonel in the U. S. Army Corps of Engineers and more recently an application engineer for Westinghouse at Seattle, has been oppointed sales manager for the company at Spokane.

● ROY D. CONSTABLE, formerly branch appliance manager, has been appointed North Pacific district appliance manager for Westinghouse Electric Supply Co., headquartered at Seattle. In his new post Constable replaces L. D. PULSIFER, who has been named general manager of Saviers Electric Corp., Reno. Westinghouse distributors for the district covering Nevada and northeastern California.

● WILLIAM S. FLEMING, sales manager, and before that merchandise manager of the California Electric Power Co., Riverside, has been made special agent in the executive department reporting to Carl Ernst, general manager. Fleming started with the company as a student in 1922 and has been identified with its merchandising activities ever since.

● SAN DIEGO GAS & ELECTRIC Co. has made an addition to its field forces in the appointment of ALAN J. MCCUTCHEON Jr., to home lighting advisor for the company. He was formerly one of the company's rural electric salesmen.

● PROMOTION of J. D. Potter as an assistant treasurer of Columbia Steel Co. has been announced by E. H. Daniel, treasurer. Potter will remain at Columbia Steel's Los Angeles office where he has been credit representative for the southern district.

● D. L. KING, assistant secretary and general attorney for the California Electric Power Co., after 18 years in the legal department, has become general counsel with Florida Power Co., at St. Petersburg, Fla.

● CLEO E. THOMAS, assistant treasurer and credit manager, has been named traveling auditor for California Electric Power Co., Riverside. B. STOKER, right-of-way agent, succeeds Thomas as credit manager.

Borda

● I. W. BORDA, manager of the Pacific Coast district of the Okonite Co., was elected a vice-president of the company at its board of directors meeting held in New Jersey late in April. Borda, who has been with the company since 1923, will continue as manager of the district.

● C. A. ROWLEY, electrical engineer, has opened his own office as consultant on wiring layouts, specifications and electrical engineering, from his home in Pasadena. Rowley, formerly an electrical contractor in Pasadena, taught classes of architects, electrical wiring design, and recently has been consulting engineer for the Thermador Co.

● BOB FIELD has been appointed to the position of manager of the central division sales section of Central Arizona Light & Power Co.

● MERRILL J. RUTHERFORD, manager of the Enterprise District of Pacific Power & Light Co., died recently at the age of 51. He joined the organization at Walla Walla, Wash., in 1925 and four years later became district manager at Seaside, Ore. He had been district manager at Enterprise since 1931.

● MARTIN O. SHEER, founder and owner of the Taylor Electric Co. in Seattle, died at his home recently at the age of 57 years. Mr. Sheer had lived in Seattle since 1914.

● AUGUST J. LUTZ, 62, former Seattle manager of the General Electric Supply Co., died in Chicago where he had been transferred. Mr. Lutz was in Seattle from 1914 to 1930.

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2. DEPENDABILITY—RACO materials are approved by Underwriters! Every box goes into the job. Brackets are secure, the clamps hold, and devices are easily and securely installed.
3. COMPLETENESS—RACO supplies a complete, practical line of boxes and covers, at all times for both commercial and home wiring.
You can always rely on RACO!
RACO
ALL-STEEL PRODUCTS
ALL-STEEL EQUIPMENT Inc.—800 Kensington Ave., Aurora, Illinois
"A BOX FOR EVERY NEED"

ALL KINDS
of SMALL
TRANSFORMERS

—in the JEFFRIES line

Practically all your small transformer needs are supplied by the Complete Jeffries line. We have specialized for years in providing transformer to exactly match your requirements. If not in our regular line, we build to meet your specifications in a hurry!

Minimize your voltage losses. Specify scattered transformers to eliminate duplicate conduit runs, and save on power costs.

JEFFRIES TRANSFORMER COMPANY
1710 E. 57th St. Los Angeles 11, Calif.

ALL the strength and durability inherent in steel are combined—with definite economies—in Crapo Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous Crapo Galvanizing Process, provide lasting protection against corrosion.

Ask the distributor of Crapo Galvanized Products near you or write direct for further information!

INDIANA
STEEL & WIRE CO.
MUNCIE, INDIANA

NOTES ON THE TRADE

● ROBERT L. KOEHLER has resigned as director of sales for The Four Wheel Drive Auto Co., Clintonville, Wis., to join in a partnership with Oscar E. Betow and John E. Battes in the FWD Pacific Co., which distributes FWD trucks throughout the state of California. Battes leaves his post as FWD's Western zone sales manager to join the partnership. The three partners have purchased FWD's Los Angeles branch. M. O. Stockland Jr., at one time manager of FWD's San Francisco branch, succeeds Koehler as director of sales of the company.

● WEINER BROS. ELECTRICAL SUPPLY Co. has opened a new electrical wholesale establishment in Denver. Partners of the firm, Harry and Abe Weiner, will distribute Moe-Bridges lighting products throughout Colorado, parts of Wyoming, Nebraska and New Mexico. The brothers have been in the electrical contracting business in Denver for the past 32 years. In their new business they have discontinued their electrical contracting business and will devote their entire efforts to wholesale distribution.

● WESTERN INSULATED WIRE Co. recently concluded its annual sales convention held at Coronado, Calif. Company representatives from all parts of the country heard reports from the technical and engineering departments as well as discussions of new products.

● THE ENGINEERING, sales and servicing of Esterline-Angus recording instruments and associated products in the Seattle territory have been taken over by Eicher & Co., Seattle. Senior member of the firm is H. L. Eicher. Junior members include R. E. Richards and John D. Eicher.

● SUES, YOUNG & BROWN Inc. recently opened new offices and warehouse at Exposition Place and Bronson, Los Angeles, with special events celebrating the occasion including a television broadcast.

● UTILITY APPLIANCE Corp., Los Angeles, has appointed Herb Leo as its sales manager in charge of heating. Leo has been the company's chief engineer for the past six years.

● IDAHO STEEL PRODUCTS Inc., Boise, has been appointed distributor of Reynolds aluminum mill products for the Idaho territory. The company will handle Reynolds aluminum flat sheet, coils, wire, rod, bar, structurals, tubing and standard extruded architectural shapes.

● JOHN E. KELLY, formerly with the J. N. Ceazan Co., San Francisco, has been appointed manager of advertising and sales promotion for Incandescent Supply Co., manufacturers and distributors of lighting fixtures, electrical supplies and appliances. He will coordinate advertising for the company's four offices in San Francisco, Oakland, Fresno and Los Angeles.

● CONRAC Inc., manufacturer and distributor of electronic equipment, with offices in Hollywood and New York, has purchased the Peyton Television Co., Glendora, Calif., and will introduce a new plan of television sales for Western retailers. Its television sets, to be tradenamed "Television by Conrac" will be made available without cabinets to dealers.

● FRANK EDWARDS Co., San Francisco, has taken on distribution of Lewyt vacuum cleaners in northern and central California. With the appointment the firm added two men to its staff. Charles Barr will work in the San Joaquin and Sacramento valleys, and Dick Baldwin in the San Francisco and East Bay areas, specializing in Lewyt sales.

● C. F. NOURSE announced the moving of the Nourse Equipment & Engineering Co. from 548 Grand Ave., Oakland, to 112 Market St. in the Santa Marina Bldg. He handles motor, generator, transformer, lighting plants, diesel, electric generating plants, etc.

● E. C. BUEHRER ASSOCIATES, northern California representatives for the Automatic Transportation Co., formerly located at 562 Bryant St., San Francisco, has moved into new sales quarters at 527 Folsom St.

● JACK DAVIES, formerly with the Canadian General Electric Co. at Vancouver, B. C., has taken over the business of Fraser Radio & Electric, Vancouver.

● VANCOUVER LIGHTING SUPPLY Co. Ltd. has opened its new factory at 924 East Hastings St., Vancouver, B. C. The plant will specialize in custom built electrical fixtures for commercial and industrial installations.

● W. J. LANCASTER Co., San Francisco, recently moved from 25 California St. to enlarged quarters at 221 11th St.

Cross Section Showing Indentations.
INDENTER-TYPE
Install E. M. T. Faster and Neater with BRIEGEL Thin-Wall Fittings
SELF-THREADING
NEATER • FASTER • STRONGER • APPROVED
All B-M Fittings Carry the Underwriters' Seal of Approval
UL
BM
TELESCOPE SYSTEM

FOR faster, neater and stronger thin wall conduit connections insist on either Briegel Indenter or Twiston Briegel Self-threading type all steel, one piece connectors and couplings.

B-M Indenter fittings, the only approved couplings and connectors of this type, have long enjoyed wider use and application than any other method of installing E.M.T.

The new B-M Twiston Self-threading fittings now make it possible to have threaded, raintight E.M.T. connections without the use of dies. Two complete turns with a pair of pliers threads the tubing and screws the fittings into a locked position, which results in the strongest connection possible and one that will withstand severe vibration.

Whatever the thin wall job might be, you will find that you can do it neater, faster and better with Briegel UL Approved E.M.T. fittings.

BRIEGEL METHOD TOOL CO.

GALVA, ILLINOIS

DISTRIBUTED BY

The M.B. Austin Co., Northbrook, Ill. Clifton Conduit Co., Jersey City, N.J. The Steelduct Co., Youngstown, Ohio Nat. Enameling & Mfg. Co., Pittsburgh
Clayton Mark & Co., Evanston, Ill. Gen. Electric Co., Bridgeport, Conn. Enameled Metals, Pittsburgh, Penn. Kondu Mfg. Co., Ltd., Preston, Ontario

KELLEMS

CABLE GRIPS

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The best way to pull wires and cables, or to support risers and service cable. Strong, flexible and easily installed.

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EXTRA Holding Power
QUICKLY Installed
TOUGH For long life

EVERSTICK ANCHORS

For new construction and maintenance —Everstick Anchors speed up work and provide dependable anchorage on all types of jobs. Made of resilient, rust resistant malleable iron. The toughest anchors made. Write for bulletin.

EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

● FARR, ROBINSON & BIRD Ltd., Vancouver, B. C., has changed its name to Vancouver Lighting Supply Co. Ltd. President of the reorganized company is C. B. MacDougall. Walter Funsinn is secretary, and Arthur A. Jones, treasurer and general manager. Before joining the organization Jones served as commercial lighting designer for the British Columbia Electric Co. at Vancouver.

● GIVEN MFG. CO., Los Angeles, has announced the appointment of Northwest Appliance Distributors Inc., Seattle, as its distributors for western Washington. The company also announced the appointment of Steve Webb as factory district manager in the Pacific Northwest. Webb will coordinate distributor and dealer activities for Waste King pulverator advertising and merchandising programs.

● ELECTRICAL EQUIPMENT CO., 14547 Madison Ave., Cleveland 7, Ohio, has been appointed Ohio sales and service representative for the Pacific Electric Mfg. Corp., San Francisco, according to an announcement by Edward F. Sixtus, vice-president of the manufacturing company.

● WEIDENTHAL-GOSLINER ELECTRIC Works, San Francisco, has been appointed a certified service shop for Allis-Chalmers motors and controls in San Francisco, Contra Costa, Alameda, San Mateo and Marin counties in California.

● A. J. LINDEMANN & HOVERSON CO. has appointed Jack Plano, formerly with the Seattle office of Lynn & Chemnitz as district manager in the Pacific Northwest for the complete line of L & H electrical ranges and water heaters.

● NORTHWEST APPLIANCE DISTRIBUTORS Inc., Spokane and Seattle, have taken on distribution of L&H electric ranges and water heaters manufactured by the A. J. Lindemann & Hoverson Co.

● POWELL ELECTRIC CO., Albuquerque, has been named a certified service shop for Allis-Chalmers motors, controls and transformers in the state of New Mexico.

● L. S. TAUFENBACH organization will serve as sales representative on the Pacific Coast for Radion Mfg. Corp., to place and direct distribution of Radion portable antenna.

● TRI-STATE SUPPLY Corp., Los Angeles, has launched a traveling showroom which will tour West Coast cities, it was announced by C. F. Bowers, president. The showroom includes demonstration units, a technical exhibit of products represented, and three sound and color motion pictures.

● KERWIN, SHANE & YOUNG Inc., a new distributing firm set up recently in Los Angeles, will serve the southern California area as exclusive distributors for Sentinel radios and television receivers as well as small appliances. Officers of the firm are Jim Kerwin, who has been with Gough Industries for the past 22 years; Harry Shane, formerly with Gough, and Martin Young, who has been in the wholesale furniture business in Los Angeles for a number of years. Warehouse and showrooms of the new firm are located at 1131 S. Los Angeles St.

● THOMPSON-DIGGS Co., appliance division, San Francisco, has been appointed distributor for Horton washers and ironers in northern California and western Nevada, Toastmaster electric water heaters, Quality ranges, and is exclusive distributor in the area for International Harvester refrigerators and freezers. The firm recently opened a new additional showroom at the Western Merchandise Mart, San Francisco.

● NEWLY APPOINTED Allis-Chalmers dealers are the Mill Supply Corp., Salem, Ore., for the firm's motors, controls and Texrope drive equipment, and the Dominic Hardware, Pittsburg, Calif., for Allis-Chalmers centrifugal pumps in Contra Costa, Solano and Sacramento counties.

● COLUMBIA STEEL Co. has announced that it will discontinue production of commercial castings at its Pittsburg, Calif., plant. All other steel-producing units of the plant will continue in operation.

● LOU STUTZ, formerly of Pacific Coast Wholesalers, is now associated with Stutz-Simmons Inc., Los Angeles, representing Mastercrafters Clock & Radio Co. and Ceramic Clock Co.

● KEITH L. CHAMBLIN, manager of California Electric Service Inc., is now located in the firm's new building at 832 S. Alvarado, Los Angeles.

MOTORS, GENERATORS, TRANSFORMERS

1 — 1500 H.P.
Bought and Sold
New and Rebuilt

ELECTRIC EQUIPMENT CO.
ROCHESTER 1 N Y

● ARROW-HART & HEGEMAN ELECTRIC Co., manufacturer of wiring devices and control apparatus, has announced the appointment of H. J. Fonda as sales manager of the jobbing division of the comany. Fonda was transferred from Dallas, where he was district manager for the Southwestern territory for ten years.

● B. S. GREEN, III, has been assigned sales representative in the southern California territory for Toastmaster Products Division, McGraw Electric Co. He will operate from the Los Angeles district office under K. E. Campbell, district manager.

● MOTOROLA Inc. has opened a new research laboratory in Phoenix which will be devoted exclusively to electronic research in military fields. The Phoenix laboratory will be under the direction of Daniel E. Noble.

● W. G. LANDES Co., Western Merchandise Mart, San Francisco, has taken on West Coast representation for products of International Television Corp.

● BARSTOW & DORAN, Los Angeles, will represent Jewel Radio Corp. in southern California and Nevada.

DIRECTORY ADDITIONS

DIRECTORY OF MANUFACTURERS

COPPER ALLOY FOUNDRY CO., Hillside, N. J.—E. E. Graham, Houston, Texas.
FEDERAL TELE. & RADIO CORP., Newark, N. J.—Maydwell & Hartzell Inc., San Francisco, Los Angeles, Portland, Seattle.
HYKON MFG. CO., Alliance, Ohio—J. R. Penning, Seattle (Washington and Oregon).
IDEAL ELECTRIC & MFG. CO., Mansfield, Ohio—G. N. Somerville, San Francisco.
TOMIC SALES & ENG. CO., Detroit, Mich.—Kenneth B. Schumann, Denver (Colorado, Wyoming, Utah, New Mexico).

DIRECTORY OF REPRESENTATIVES

DENVER: Kenneth B. Schumann, 814 12th St.
HOUSTON: E. E. Graham & Co.
SAN FRANCISCO: G. N. Somerville.
SEATTLE: J. R. Penning, 2323 Second Ave. (1).

DIRECTORY OF APPLIANCE SERVICE & REPAIR PARTS

HOTPOINT, INC., 5600 West Taylor St., Chicago 44, Ill.

Commercial cooking equipment:

SALT LAKE CITY: Restaurant & Store Equipment Co., 136 So. West Temple St.
BILLINGS: Northwest Fixture Co.
DENVER: General Electric Supply Corp., 1429 18th St. (17).
ALBUQUERQUE: General Electric Supply Corp., 820 No. First St.

That Extra Reinforcing Thread Plate Assures Connections That Are Stronger And Last Longer

Sherman "Wedge-Grip" Connector

Examine the above illustration, and you'll see that the screw in the Sherman Wedge-Grip Connector passes through two thicknesses of metal. The extra insert plate you see is a patented feature which doubles the thread strength—enables you to make connections that are twice as tight—twice as permanent.

Try the Wedge-Grip today. It's today's finest Solderless Connector for all small wire connections.

H. B. SHERMAN MFG. CO.
Battle Creek, Mich.

Sizes and Specifications

Part No.	Minimum Capacity	Maximum Capacity
SC-12X	2-20 Solid	2-12 Solid
SC- 6X	2-12 Solid	2-6 Strand
SC- 6	2-12 Solid	2-6 Strand
SC- 4X	2- 8 Solid	2-4 Strand
SC- 2X	2- 4 Solid	2-2 Strand

Part No.	Type Screw	Carton Quantity
SC-12X	Hex Head	200
SC- 6X	Hex Head	100
SC- 6	Plain Head	100
SC- 4X	Hex Head	100
SC- 2X	Hex Head	50

Sherman "Wedge-Grip" Connectors

NEMCOITE
Built-Up Mica Products for Every Electrical Insulating Use

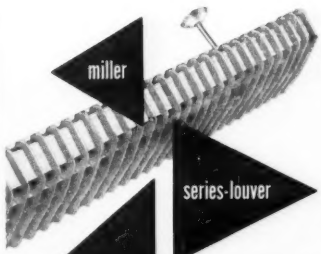
Sheets
Strips
Tubes
Punched and Molded Pieces

Cut and Uncut Mica for Electrical, Condenser and Electronic Applications

"Your Product is only as good as its Insulation"

Manufactured by
NEW ENGLAND MICA CO.

Distributed by
ELECTRICAL SPECIALTY CO.
SAN FRANCISCO 316 Eleventh St.
LOS ANGELES 418 E. Third St.
SEATTLE 2406 First Ave.
PORTLAND 325 N. W. 6th Ave.
DENVER, 1015 Twenty-first St.



ANNOUNCING
for commercial and industrial interiors
a new high in lighting

New flexibility of application of the 96 in. slimline fluorescent lamp. New simplified installation, operation and maintenance. Write for miller slimline catalog 2G.

THE miller COMPANY

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PROFILES

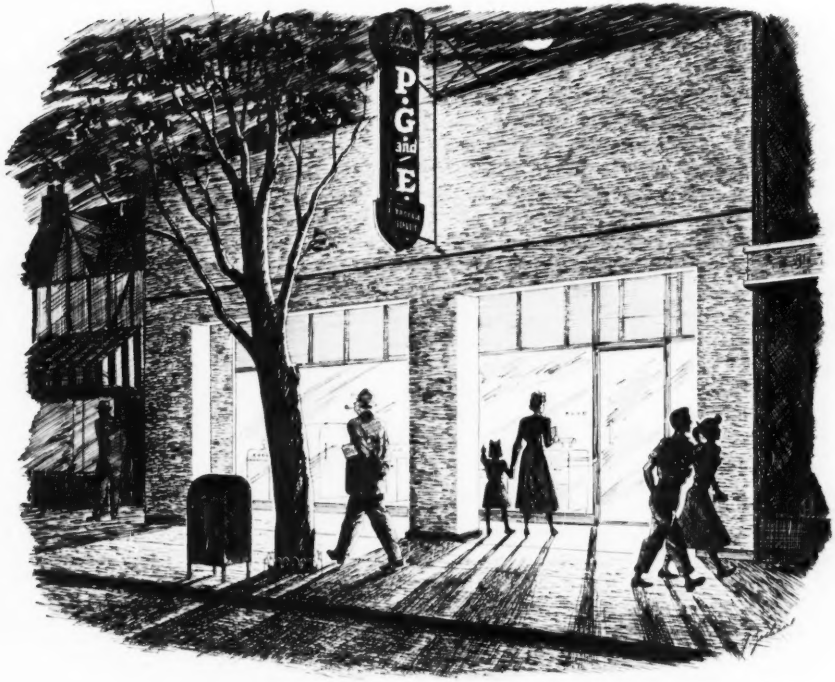
Ray L. Dunshee who has succeeded D. K. Coyle as commercial manager of Sacramento Municipal Utility District

W. R. Windfield (below), who recently became district operating manager for Graybar Electric Co. at Seattle, Wash.

Photographed at the RMEL Spring Conference, left to right: Norman Wicks, National Adequate Wiring Bureau; Fred Saltisberg, Cheyenne Light Fuel & Power Co.; Ted Foulk, Public Service of Colorado; William Petch, Cheyenne Light Fuel & Power Co. For story of the meeting and other pictures, see page 120

Lyle M. Bailey, Sechrist Co. (standing), was chairman of the May 5 meeting of the Rocky Mountain Chapter IES. Robert Dummel, Holophane Co. (seated to right of Bailey), was the speaker reviewing past research in foot-candle levels

the gas and light store on main street



Did you ever realize that P. G. and E. is a local merchant in your community?

It is just that! P. G. and E. sells gas and electricity through its "stores" in almost every Central and Northern California community. Instead of trucks or delivery boys it uses pipe and wire to deliver its "merchandise" to your home or place of business.

Like other local merchants, P. G. and E. owns or rents stores, employs local people and pays taxes. Actually, it's one of the largest local taxpayers in your community. Twenty-nine cents of every dollar of its revenue goes for taxes — federal, state or local.

P. G. and E. payroll dollars are spent and go to work *locally* for food, rent, clothing, amusements, and for other things that other local merchants have to sell.

P. G. and E. people are active in local first aid training, civic groups and welfare organizations. Like other merchants, P. G. and E. is a good citizen and a good neighbor.

for the record

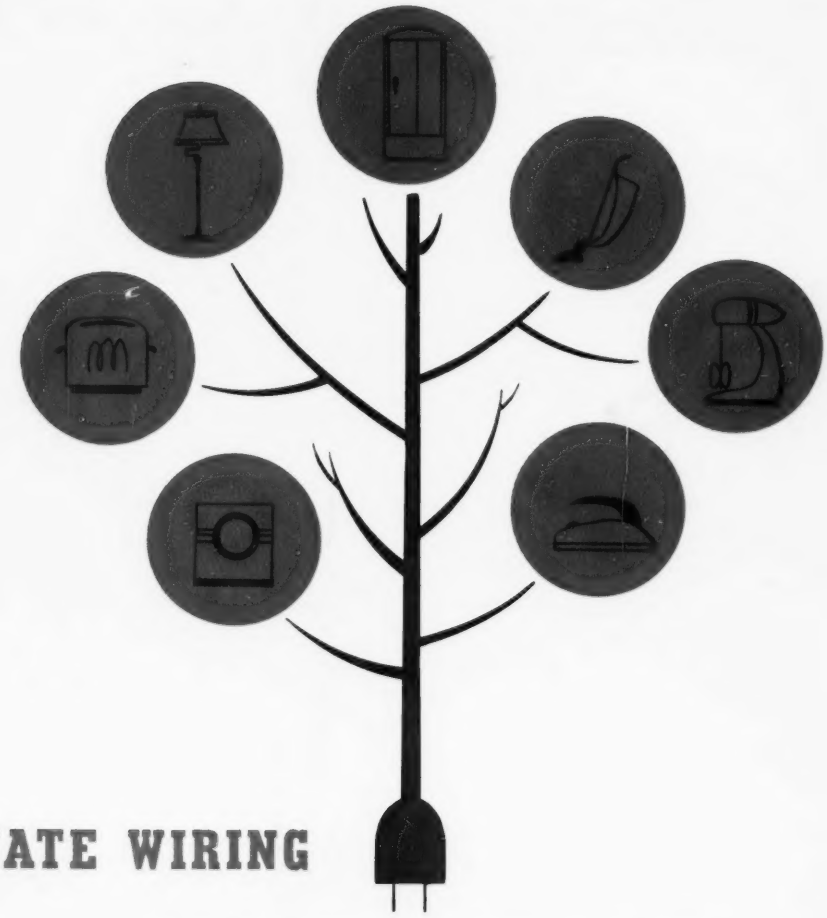
Our postwar construction program has created 7,000 jobs, more payrolls.

It has put half a million new electrical horsepower to work for you.

Another 1½ million horsepower is on the way. That means still more jobs, still more payrolls.

P·G·and E· PACIFIC GAS AND ELECTRIC COMPANY

EW 106-649



ADEQUATE WIRING

SOWS THE SEED FOR SALES!

Help yourself to a richer profit harvest by promoting Adequate Wiring. The homes with plenty of circuits, outlets and switches are the most fertile fields for electrical appliance sales.

Electrical appliances are designed to fill some want, to make some task easier, to provide some added comfort, convenience or pleasure in the home. Your customer buys a better way to cook, rather than an electric range; easier washdays, not an electric washer. Her future purchases depend to a large extent on whether she receives full value from these services she buys.

It takes efficient performance from every appliance to put the "prove" in customer "approval." And Adequate Wiring provides it. In terms of business for you, that makes repeat sales grow where only first sales grew before!

PACIFIC COAST ELECTRICAL ASSOCIATION

601 West Fifth Street, Los Angeles 13, California
447 Sutter Street, San Francisco 8, California